# PLANTS OF KHOKHAN WILDLIFE SANCTUARY, KULLU DISTRICT, HIMACHAL PRADESH

A THESIS TO BE SUBMITTED TO

**THE UNIVERSITY OF TRANS-DISCIPLINARY HEALTH SCIENCES AND TECHNOLOGY**

FOR THE AWARD OF THE DEGREEOF
M. SC LIFE SCIENCE (PLANT SYSTEMATICS)

BY

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UNDER THE GUIDANCE OF

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JANUARY 2023

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I declare that this thesis entitled "**Plants of Khokhan Wildlife Sanctuary, Kullu district, Himachal Pradesh**" submitted for the award of Master Science to THE UNIVERSITY OF TRANS-DISCIPLINARY HEALTH SCIENCES AND TECHNOLOGY, Bengaluru, is my original work, conducted under the supervision of my guide Dr. S. Noorunissa Begum and co-guide, Dr. Kumar Ambrish. I also wish to inform that no part of the research has been submitted for a degree or examination at any university. References, help and material obtained from other sources have been duly acknowledged

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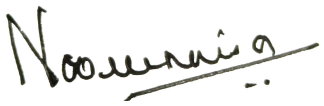

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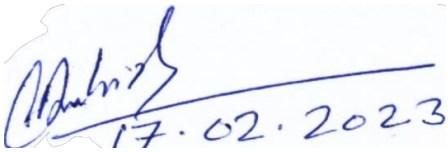


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## List of Abbreviations

A - Ayurveda

BSI - Botanical Survey of India

BSS - Botanical Survey Solan Herbarium

C - Chinese Medical System

*cf.* - confer, compare

etc. - Et cetera

F/V - Folk

FRLH - Foundation for Revitalisation of Local Health Traditions Herbarium

H - Homoeopathy

HVT – High Volume Traded

*i.e.* - *id est*, that is

M - Western

MT - Metric ton

NE - North East

PA - Protected Area

S - Siddha

SE – South East

sp. - Species (singular)

spp. - Species (plural)

subsp. - subspecies

T - Sowa Rigpa

U - Unani

var. - variety

*viz.* – *videlicet*

WLS – Wildlife Sanctuary

## Synopsis

During the ongoing anthropocene extinction event driven by unsustainable human activities there is an urgent need to conserve our biodiversity and first steep for conservation is documentation of biodiversity. For the purpose of conservation several protected areas are designated by government but their biodiversity and particularly flora of many of these protected areas is poorly known. Khokhan Wildlife Sanctuary of Kullu district is one of the oldest protect area in Indian Himalayan region harboring high biodiversity, yet very little is known about floristic diversity of Khokhan. During the preliminary surveys conducted in year 2019-20, IUCN red listed threatened plant species like *Gentiana kurroo* (Critically endangered) and *Paris polyphylla* (Vulnerable) was found to be present in good number, which was not reported from this protected area. So, to know the plant diversity present in Khokhan WLS this study was taken, which also forms to be the first complete documentation of floristic diversity of any Wildlife Sanctuary of state Himachal Pradesh and will form as a base line work for future conservation actions and management plans by stakeholders.

## List of publications

### Conference Papers

1. Mycoheterotrophic orchid diversity of Khokhan Wildlife Sanctuary, Kullu district with a rediscovery of rare, endemic *Neottia microglottis* (Duthie) and two new additions to the state flora of Himachal Pradesh.
   Presented as oral presentation at XXXII Annual Conference of Indian Association for Angiosperm Taxonomy at Karnatak University, Dharwad, Karnataka, India.

2. Himalayan endemic and IUCN red listed threatened plant diversity of Khokhan Wildlife Sanctuary of Kullu district, Himachal Pradesh, India.
   To be presented as oral presentation at second International Symposium on Plant Taxonomy, Ethnobotany and Botanical Gardens, Kolkata, 13-14 February, Organized by Botanical Survey of India, MoEFCC, Govt. of India.

# Chapter 1 - Introduction to the area

## 1.1 Name, Location, Constitution and Extent

Khokhan Wildlife Sanctuary (WLS) has been named after the small village, Khokhan near Bhuntar on the right bank of the Beas River, situated in the Kullu District of Himachal Pradesh. It is situated about 10 km South West of Kullu Town. The sanctuary is situated within the Geo-coordinates North (Lat 31°52'50" Long 77°04'50"), East (Lat 31°51'37" Long 77°06'54"), South ( Lat 31°49'44" Long 77°04'56"), and West (Lat 31°50'55" Long 77°03'19") which falls on Survey of India topo sheet No. 53 E/1 scale 1:50:000. This Protected area (PA) is surrounded by Parvati Forest Division on all sides except the southwest where lies the boundary of Nargu Wildlife Sanctuary, in Mandi District, which is also being managed by the Kullu Wildlife Division. The extent of the area (14.94sq km) is as per the table below.

**Break up of geographical area**

| **Types of Forest Land** | **Area (ha)** |
|---|---|
| Reserved Forest (RF) | 835.80 |
| D.P.F. | 642.69 |
| U.P.F. | 16.00 |
| **Total Area** | **1494.49** |

This sanctuary along with Manali, Kais and Kanawar was notified vide notification No. 70.GP.53/97 dated 28-02-1954 under Section 8 of the Punjab Wild Birds and Wild Animals Protection Act, 1933. The notification was published in Punjab Government Gazette dated 12.03.1954. The area of the sanctuary given in this notification is 3706 acres that on conversion comes out to be 1500.95 hectares but the actual area on the ground is as detailed in the above table, which is the area being treated correctly for all the purposes.

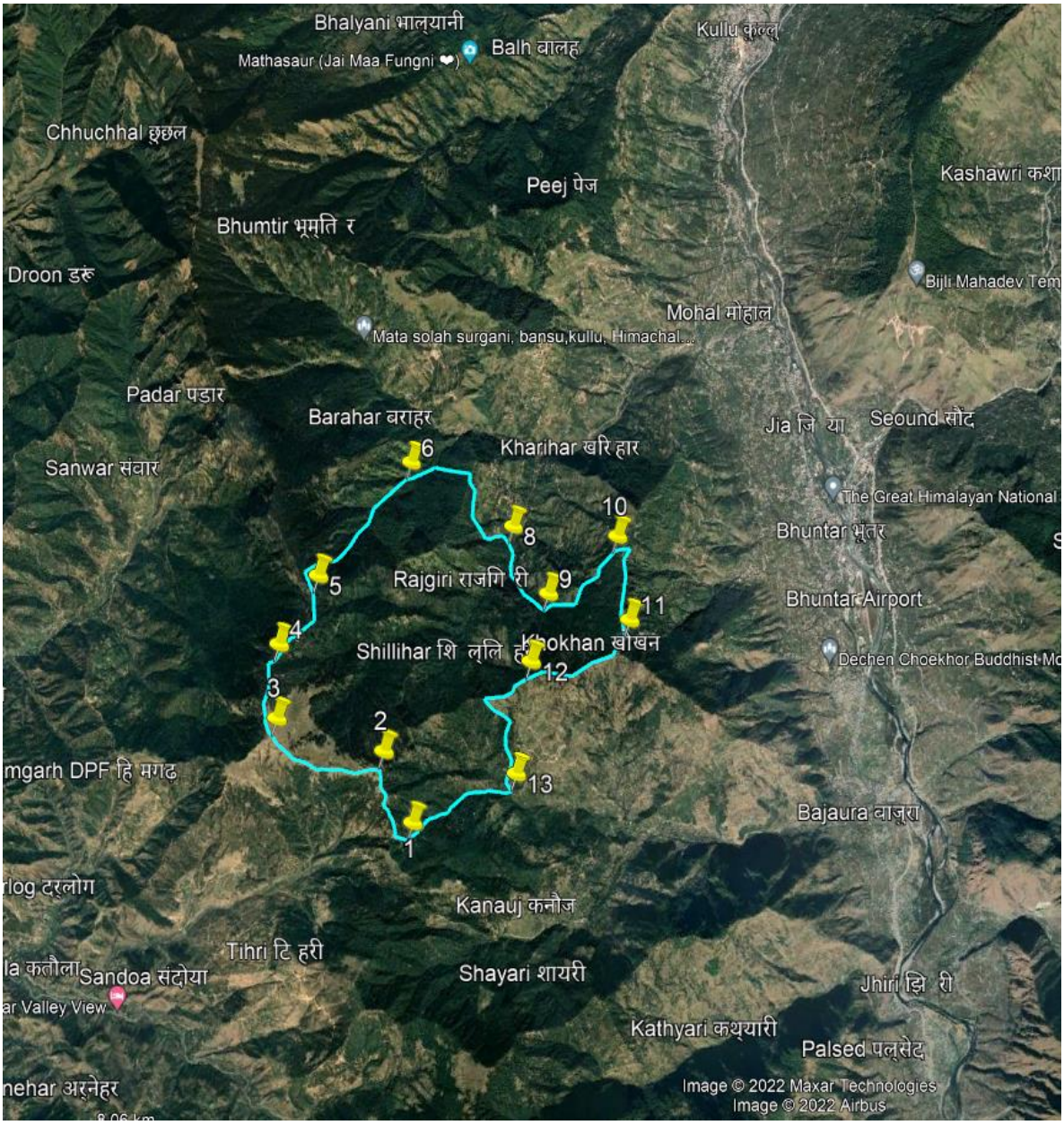


**Figure 1. Location map of Khokhan WL Sanctuary and approximate border of the area surveyed Source: Google Earth Pro made using GPS coordinates.**

The matter about the rationalization of Wildlife Sanctuaries and National Parks in Himachal Pradesh was under the consideration of the Hon'ble Supreme Court in IA No. 139/2010 in Writ Petition Civil No. 337 of 1995 titled Centre for Environment Law WWF-I Versus union of India and others.

In pursuance to the Hon'ble Supreme Court order dated 7th May 2010, the State Government issued an intention Notification under section 18 of the Wildlife (Protection) Act, 1972 in respect of the Wildlife Sanctuaries and National Parks for which rationalization had been proposed and final notification of Khokhan Wildlife

Sanctuary was issued vide HP Govt. notification No. FFE-B-F(6)-11/2005-II Khokhan dated 7th June 2013.

## 1.2 Approach and Access

This Sanctuary starts from Dohra Nala at a distance of 10 km from the district headquarters at Kullu, on a link road. Dohra Nala ends up as Mohal Khud before joining River Beas, which is its northern boundary. There is no road inside the Sanctuary. This Sanctuary covers the whole of the catchment of Shagar Nala. It also can be approached from Kandi (32 km from Kullu) in the Mandi district on the Bajaura-Kataula-Mandi road. There is a 22 km route to walk across the sanctuary from Kandi Galu in its south to Dohra Nala in its north.

The nearest Airport is Bhuntar (10 km from Kullu) which is linked to Shimla, Chandigarh and Delhi. The nearest railway station is at Joginder Nagar (126 Km from Kullu) which is connected through a narrow-gauge line with a broad-gauge rail network at Pathankot. It is convenient to travel to Kullu by road or by air from Chandigarh or Delhi. The best season to visit this Sanctuary is between April to June (Pre-Monsoon) and September to November (Post Monsoon).

## 1.3 Statement of significance

The sanctuary falls in the upper catchment of the Beas River. The Protected Area preserves a variety of Himalayan flora and fauna. The area comprises vast stretches of temperate meadows and moist Himalayan mixed forest which harbours a variety of flora and fauna. The natural and cultural richness of Kullu Valley coupled with its simple peace-loving people and traditional hospitality makes the valley a most favoured eco-tourism destination. Anybody with a spirit of adventure and love for nature will find all that he desires amongst the pristine environs of temperate forests of the sanctuary. Only a few tourists visit this sanctuary every year. A few natural camping sites are available inside the sanctuary and the most beautiful of them is at Munjhag thach/grassland. The sanctuary provides habitat and protection to various wild animals and pheasants.

The Khokhan WLS represents one of the few areas of least disturbed flora and fauna in the subtropical and temperate zones of the Western Himalayas, an area of high species diversity. This Sanctuary is inhabited by Himalayan Black Bear *(Selenarctus*

*thibetanus),* Goral *(Naemorhedus goral),* Barking deer *(Muntjacus muntjac),* Porcupine *(Hystrix indica).* Himalayan Palm Civet (*Paguma larvata*) and Rhesus Macaque (*Macaca mulatta*). Among pheasants Kalij (*Lophura-leucomeles*) and Black Francolin (*Francolinus francolinus*) are common.

The dense moist Himalayan mixed temperate forest provides shelter and protection to many rare and endangered species of flora and fauna including IUCN Red Listed and CITES appendices species like *Ursus thibetanus laniger* (Himalayan Black Bear), *Gentiana kurroo* and *Paris polyphylla* etc. Sanctuary has a high population of Kalij pheasant and Himalayan Black Bear. In the interiors of Shagar Nala, comprising Reserve Forest (RF) and Demarcated Protected Forest (DPF), the habitat is undisturbed, and wildlife is more as compared to the areas surrounding the villages falling under Undemarcated Protected Forests category. Besides the above, some of the bird species found are Long Tailed Minivet, Verditer Flycatcher, common Hoopoe, Tits, Warblers, Yellow Billed Magpie and Thrushes. With its rich gene pool and variety of ecosystem functions and processes it provides ample research opportunities. Besides forming catchment of the important perennial river Beas, it also provides ecological security and environmental amelioration in the region. It has got many educational, research and interpretational values to it.

Hence, the biological, ecological, watershed, cultural and scenic/tourism values of the Khokhan protected area make it an important biodiversity and eco-tourism hot spot.

## 1.4 Climate

The protected area falls in the Temperate Zone. There are three distinct seasons in the area, namely winter, summer and monsoon. Winter starts from October to March; summer from April to June, and the monsoons are active from July to September. Snowfall is moderate to heavy in winters. Annual average rainfall at Mohal (outside Khokhan WLS) is 875 mm (figure below) but there is no functional rain gauge available in the Wildlife Sanctuary area and rainfall is unevenly distributed in the sanctuary area with maximum observed on the Northern border near Kandi and Munjhag. There are mainly two wet seasons, first in winters starting from January to April and other during monsoon season from late June to September. Winter precipitation is brought by Western Disturbances and summer rainfall comes with South West Monsoon winds.

Some of the Northern and Western areas of Khokhan WLS likely receive upto 2000 mm precipitation annually. October, November and December are the driest months of the year. In January and early February most of the winter precipitation falls in the form of snow at higher elevations above 2500 meters like Munjhag top and Kandi Pass. Evening thunderstorms and sometimes hailstorms caused by convectional uplifts during sunny days are common in the months of late March and April. These spring rains are followed by a mainly dry short summer season from May to early June until pre monsoon rains start around mid of June. Monsoon rains arrive by the last week of June or early July and continue upto mid-September with peak in August. Landslides and flash floods mainly along nallah's/brooks are common during monsoon rains. Minimum temperature in month of January drops upto -10°C with maximum temperature upto 15-17°C and in peak dry summer season during the month of early June minimum temperature remains about 12-15°C and maximum temperature reaches upto 32°C in lower elevations of Wildlife Sanctuary.

**3. Monthly total rainfall data Mohal (2011-2018)**

**Rainfall (mm)(2011-2018)**

| Month\Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|---|---|---|---|---|
| January | 22.8 | 95.0 | 105.3 | 51.7 | 78.8 | 44.0 | 158.4 | 12.7 | **568.70** |
| February | 102.0 | 86.2 | 193.3 | 167.9 | 199.8 | 82.9 | 66.8 | 50.2 | **949.10** |
| March | 85.2 | 67.6 | 108.7 | 132.9 | 153.7 | 170.8 | 87.8 | 60.0 | **866.70** |
| April | 110.0 | 66.9 | 34.5 | 108.5 | 123.2 | 91.5 | 111.1 | 90.1 | **735.80** |
| May | 37.2 | 14.9 | 14.2 | 108.7 | 55.9 | 52.9 | 82.1 | 50.8 | **416.70** |
| June | 81.2 | 18.6 | 117.1 | 65.3 | 88.7 | 50.7 | 134.6 | 45.6 | **601.80** |
| July | 64.3 | 67.8 | 138.7 | 109.0 | 155.3 | 78.0 | 134.1 | 148.1 | **895.30** |
| August | 242.9 | 113.3 | 81.5 | 64.8 | 68.4 | 169.5 | 44.3 | 124.8 | **909.50** |
| September | 32.0 | 111.9 | 51.4 | 43.6 | 50.5 | 19.6 | 70.8 | 209.9 | **589.70** |
| October | 0.0 | 2.3 | 5.4 | 38.7 | 8.5 | 0.4 | 0.0 | 11.6 | **66.90** |
| November | 2.0 | 13.3 | 25.3 | 4.8 | 37.7 | 0.0 | 20.6 | 73.3 | **177.00** |
| December | 3.2 | 28.5 | 26.6 | 88.0 | 31.0 | 0.0 | 40.8 | 10.1 | **228.20** |
| **Total** | **782.80** | **686.30** | **902.00** | **983.90** | **1051.50** | **760.30** | **951.40** | **887.20** | |
| | | | | | | | **Avg** | | |
| | | | | | | | **875.68** | | |

**Figure 2. Monthly rainfall data from 2011 - 18 at Mohal, Kullu (driest month highlighted) Source - G.B Pant National Institute of Himalayan Environment & Sustainable Development, Himachal Regional Centre, Kullu, Himachal Pradesh.**

## 1.5 Previous Explorations

During the last century, several plant collectors have gathered plants from various

localities of Himachal Pradesh (Kangra, Kullu, Shimla, Kinnaur, Bushahr, Mandi, Sirmaur, Lahul and Spiti). William Moorcroft who collected plants from Kullu district in 1821, is among the earliest known botanists to study floristic diversity of Kullu followed by G. Watt who made plant collections from Kullu district in 1879. Later, after independence, Dhaliwal and Sharma (1999) worked on the Flora of Kullu district and documented 930 species of seed plants from Kullu district. Singh & Rawat (2000) published 'Flora of Great Himalayan National Park' and documented 832 species from the GHNP protected area. Most of the floristic surveys done in Kullu district post-independence were focused around Great Himalayan National Park, Parvati Valley, Manali and Rohtang Pass. There are no detailed floristic surveys done on flora of most of the Wildlife Sanctuaries of Himachal Pradesh and Khokhan Wildlife Sanctuary is one of those least explored protected areas of Himachal Pradesh, perhaps owing to its small size of 14.9 sq. Km and medium elevation range. Only recently, Kumar *et al.* (2019) worked on orchid diversity of Khokhan Wildlife Sanctuary and reported 16 species of orchids belonging to 11 genera from Khokhan WLS. Thus, the work being presented here forms to be the first detailed work on floristic diversity of this geographically small but floristically rich Khokhan Wildlife Sanctuary protected area.

## 1.6 Objectives of study

- Enumeration of the entire floral diversity (Angiosperms, Gymnosperms and Pteridophytes) of Khokhan WLS.
- Gathering information on IUCN red listed threatened plant species present in Khokhan WLS.
- Documenting diversity of tree species present in Khokhan WLS which will be of help for the state forest department in education and making conservation policies.
- Assessing Himalayan endemic plant diversity of Khokhan protected area.
- Collecting information on High Volume Traded medicinal plant species present in the Khokhan WLS.
- Documenting naturalised exotic invasive flora present in Khokhan WLS which will facilitate forest department in making eradication strategies for potentially invasive species present in Khokhan WLS

# Chapter - 2

# Material and methods

Extensive field surveys were done throughout the Khokhan WLS covering different forest types and habitats which resulted in photographic documentation and plant herbarium collections to document the maximum possible number of species present in the Khokhan Wildlife Sanctuary. Twenty-six plant exploration trips were conducted during seven months from April to early October 2022. Standard procedures were adopted for field survey, plant collection and identification. Protocols of Jain & Rao (1977) are followed for preparing voucher herbarium specimens. During the field survey, notes on habit, habitat, abundance, ecological features and macroscopic characters of the species such as height, the colour of flowers, etc. were recorded. Plant habit and closeup photographs of all documented plants were taken in the reproductive phase (flowering or fruiting) using DSLR Nikon D5300 with Tamron 90mm prime lens for closeup macros and 18-55mm broad angle lens is used to get photographs of plant habit and habitat. The specimens collected were identified with the help of treatises on Indian flora, state and regional floras, monographs, revisionary works and comparing them with the authentic specimens at different herbaria available online on Global Biodiversity Information Facility (GBIF) and Indian Virtual Herbarium (IVH) website. To bring the updated nomenclature, Plants of World Online (POWO) online database published by the Royal Botanic Gardens, Kew, International Plant Name Index (IPNI) and BSI checklist of plants of India are followed. All the families (angiosperm and gymnosperm) are arranged in alphabetical order followed by pteridophytes in the end. Global distribution of all species is given following POWO, 2022 and Indian state wise distribution is given for all angiosperms and gymnosperms following BSI checklist of plants of India (available online) and Plants of Indian Himalayan Region (An Annotated Checklist & Pictorial Guide) Part - I & II.

For each family arranged in alphabetical order, the family name is given in bold letters, followed by the accepted botanical name with author citation which are continuously numbered. For the species with recent nomenclature changes, the currently accepted name is followed by recent synonyms which are still in use which is followed by information on flowering and fruiting period; species global native distribution,

introduced distribution for exotic species, Indian state wise distribution, herbarium field number, medical system (if used) and notes (if any relating to conservation status, endemics, edibility, HVT sp., introduced invasive sp., nomenclature issue and trade names).

About five hundred herbarium sheets are prepared which counts for 395 plant species including angiosperms, gymnosperms and pteridophytes that are collected during the survey. All the herbarium specimens cited in the present work are deposited in the FRLH Bengaluru herbarium along with one hundred one (101) duplicates deposited at BSS herbarium of High Altitude Western Himalayan Regional Centre (HAWHRC), Botanical Survey of India, Solan.

# Chapter 3 - Observations

## 3.1 Topography

Topographic factors have a great influence on vegetation through their influence on climatic factors that have a direct bearing on the vegetation of a place. Among topographic factors altitude variation, which ranges from 1510 m to 2787 m, is most prominent. Numerous high ridges, deep gorges and narrow valleys characterise the terrain. Other topographic factors are the configuration of the land surface, slope, aspect and exposure. These all factors have an influence on temperature, wind movement, runoff affecting erosion on steep slopes and deposition on relatively gentler slopes etc. Thus, these factors lead to a wide range of vegetation present in Khokhan WLS.

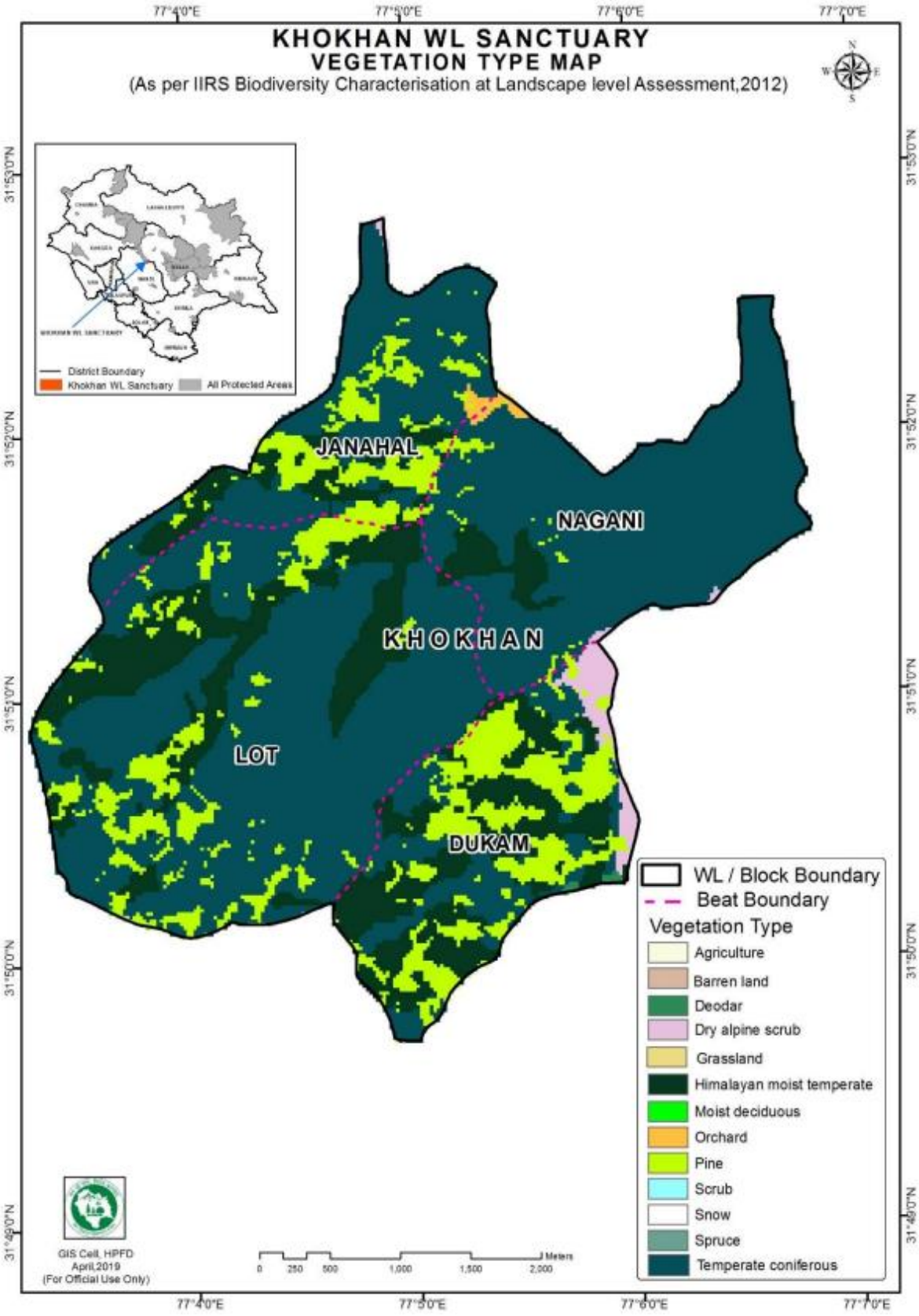


**Figure 3. Vegetation type map of Khokhan WLS.**

**Source - Kullu Wildlife Division, Himachal Pradesh Forest department.**

## 3.2 Forest types of the Khokhan WLS area

**Temperate Chir Pine Forest (9/Clb)**

Dominated by *Pinus roxburghii* with *Pinus wallichiana* mixing in the upper limits around 2000 meters elevation. These types of forests are found in K-III Shattu Nal and on the way to Ori Thatch.

**Evergreen Ban Oak Forest (12C1a)**

Dominated by *Quercus leucotrichophora* with occasional *Rhododendron arboreum and Lyonia ovalifolia.* Commonly seen forest type around 2000 meters at Kandi on the way to Langani.

**Alnus forest (12/IS1)**

These are found along water streams/brooks, dominated by *Alnus nepalensis, Betula alnoides, Acer cappadocicum, Meliosma dilleniifolia* and *Meliosma simplicifolia. Alnus nitida* is mainly restricted to lower elevations (1500 meters) along nallahs/brooks like Dohranala while *A. nepalensis* is much common in upper elevations (2000 meters)in moist shady areas of jungle.

**Temperate Mixed Coniferous Forest (12 C1d)**

The main species are *Pinus wallichiana, Cedrus deodara, Picea smithiana,* and *Abies pindrow*. This type is found on the shady moist northern and eastern aspects above 2000m. Some dense pure strands of Deodar forest can be seen in the Northern aspect especially on the way from Nagani to Chwara Top.

**Temperate Broadleaf Moist Deciduous Forests (12C2/2c)**

Found in the shady moist aspects above 1800 meters. Prominent species in these forests are *Aesculus indica, Carpinus viminea, Juglans regia, Prunus cornuta*.

**Kharsu Oak Forest (12 C2b)**

These forests contain Kharsu Oak (*Quercus semecarpifolia*) as dominant species with *Picea smithiana* and *Abies pindrow* admixtures. Only some small patches are found on the way to Munjhag top from Khoruvihal Nursery above 2500 meters.

**Temperate Grasslands (12/DS3)**

Found in border areas of Pine forest. Dominant species include *Themeda anathera, Chrysopogon spp., Leptorhabdos parviflora, Swertia alata, Artemisia spp.* These pastures are mostly found between 2000 m to 2400 meters. Ori Thatch is a typical example of this grassland.

**Sub Alpine Pastures (14/DS1) (Thatches and Forest blanks)**

Only restricted to Munjhag Top and nearby ridges above 2500 meters. As the maximum altitude is only about 2800 meters and the pastures are highly grazed so they are not rich in flora. *Anaphalis* spp., *Cotoneaster microphyllus, Fragaria nubicola, Pedicularis bifida*, *Potentilla* spp. and *Hypericum elodeoides* are some occasionally encountered species.

**Figure 4. Sub -Alpine grassland at Munjhag top (highest elevation in Khokhan WLS).**

**Figure 5. *Rhododendron arboreum* and *Quercus leucotrichophora* in front with Temperate Mixed Coniferous Forest dominated by *Cedrus deodara* in the background.**

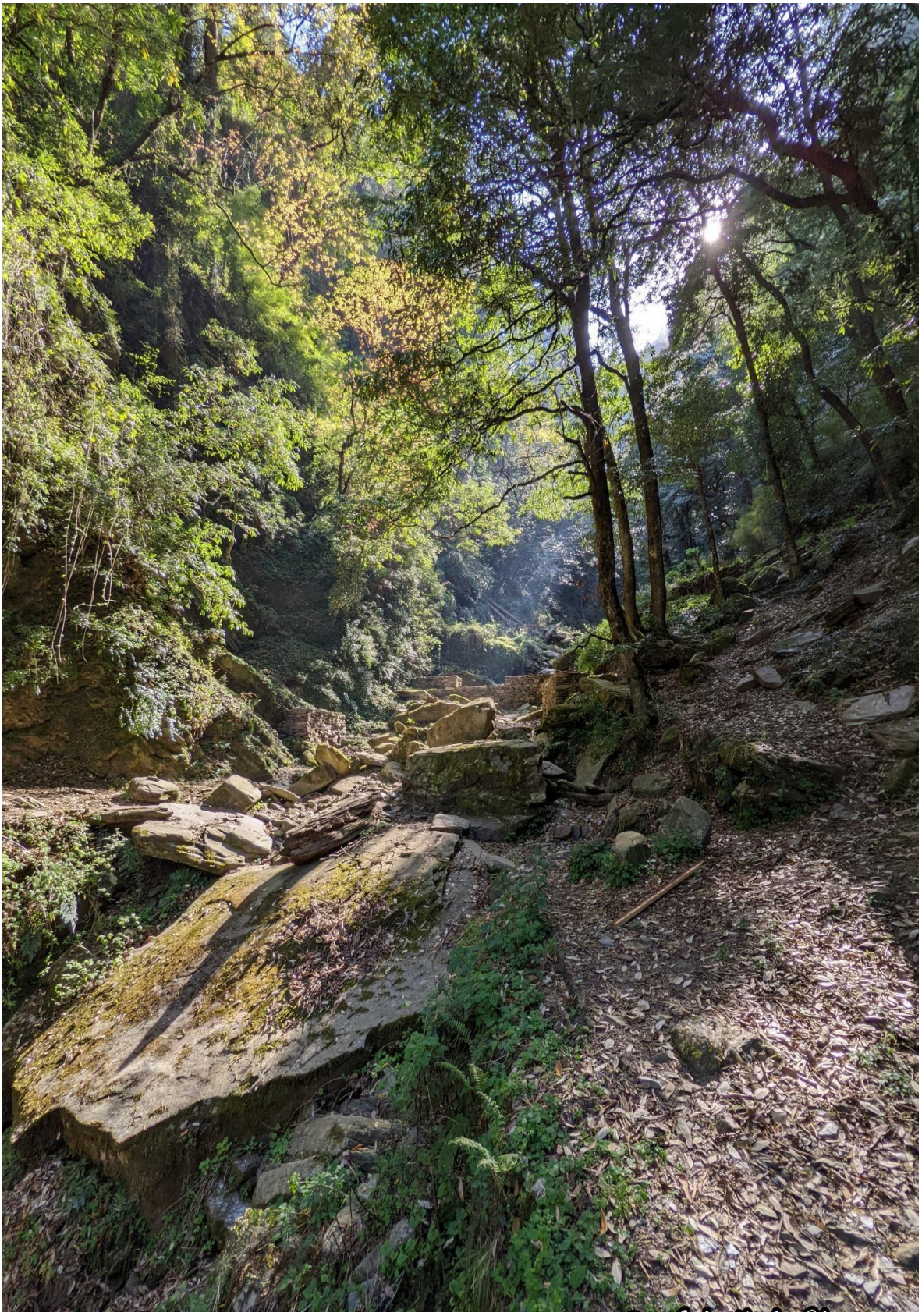

**Figure 6. Riparian ecosystem along a drying seasonal brook with ground full of dry leaf litter during peak summer season before monsoon rains.**

**Figure 7. Pure dense forest of *Cedrus deodara* in Nagni beat forest.**

### 3.3. Wild edible plants, fruits and mushrooms

**Edible plants -** *Asparagus racemosus* (young shoot), *Dioscorea bulbifera* (tubers), *Diplazium esculentum* (fiddlehead), *Ficus palmata* subsp. virgata (Fegdi/Bhryuni), *Phytolacca acinosa* (young shoot)

**Edible fruits -** *Aesculus indica* (seeds), *Berberis aristata*, *Berberis lycium*, *Debregeasia salicifolia*, *Cornus capitata*, *Juglans regia*, *Morus serrata*, *Prunus armeniaca*, *Prunus cornuta*, *Pyrus pashia*, *Rubus ellipticus*, *Rubus macilentus*, *Rubus niveus*, *Rubus paniculatus*, *Fragaria nubicola* and *Potentilla indica*.

**Edible flowers -** *Viola canescens and Rhododendron arboreum.*

**Edible mushroom species** - *Russula spp., Laetiporus sp., Morchella spp., Sparassis crispa* etc.

**Figure 8. Inhabitants around Khokhan WLS while browsing goats came across big mature *Sparassis crispa* (cauliflower fungus) which is considered as a monsoon season local delicacy.**

## 3.4 Plants of Khokhan Wildlife Sanctuary

All the reported families are listed in the alphabetic order (Angiosperm, Gymnosperm and Pteridophytes)

### 3.4.1 Angiosperms (104 families, 358 genera and 486 species)

**Scheme of presentation**

Family name (Number of genera and species)
Accepted botanical name with author citation -
Synonym - (only for species with recent nomenclature changes)
Habit – (Herb/Shrub/Tree); Flowering and Fruiting - (months)
World distribution/World native distribution - (country wise distribution)
Introduced into - (wherever applicable)
Indian distribution - (state wise distribution)
Herbarium collection number - (for species that are collected)
Medical System - (if any)
Note - (if any relating to conservation status, endemics, edibility, HVT sp., introduced invasive sp., nomenclature note and trade names)

**Family – Acanthaceae (5 genera and 6 species)**

**1)** ***Barleria cristata*** L.

Habit - Herb; Flowering and Fruiting - August to October
World distribution - Bangladesh, Cambodia, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, New Guinea, Pakistan, Panama, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam
Indian distribution - Throughout the country
FRLH 125522
Medical System - ATS

**2)** ***Dicliptera bupleuroides*** Nees

Habit - Herb; Flowering and Fruiting - April to August

World distribution - Afghanistan, Bangladesh, Cambodia, China, India, Laos, Myanmar,
Nepal, Pakistan, Thailand, Vietnam
Indian distribution - Throughout the country
FRLH 125467
Medical System - F

**3)** ***Justicia pubigera*** (Nees) Wall. ex C.B.Clarke
Habit - Herb; Flowering and Fruiting - July to September
World distribution - India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu and Kashmir, Uttarakhand
FRLH 125564
Note - Endemic to Western Himalaya

**4)** ***Rostellularia procumbens*** (L.) Nees
Synonym - *Justicia procumbens* L.
Flowering and Fruiting - July to September
World distribution - Bangladesh, Cambodia, China, India, Japan, Jawa, Korea, Laos, Malaya, Maldives, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Sulawesi, Sumatra, Taiwan, Thailand, Vietnam
Indian distribution - Throughout the country
FRLH 125319
Medical System - AVSC

**5)** ***Strobilanthes attenuata*** (Wall. ex Nees) Jacq. ex Nees
Habit - Herb; Flowering and Fruiting - August to October
World Distribution - Afghanistan, Bangladesh, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu and Kashmir, Punjab, Uttarakhand
FRLH 125392

**6)** ***Strobilanthes pentastemonoides*** **var.** ***dalhousieana*** (Nees) J.R.I. Wood
Habit - Herb; Flowering and Fruiting - August to October
World distribution - Bangladesh, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu and Kashmir, Uttarakhand.

FRLH 125365

**Family – Amaranthaceae (5 genera and 7 species)**

**7)** ***Achyranthes bidentata*** Blume

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - Bangladesh, Borneo, Cambodia, China, India, Japan, Jawa, Korea, Laos, Nepal, New Guinea, Pakistan, Philippines, Solomon Is., Sri Lanka, Sulawesi, Sumatra, Taiwan, Thailand, Vietnam

Introduced into - Angola, Cameroon, Canada, Gulf of Guinea Is., Nigeria, Primorye, U.S.A

Indian distribution - Nearly throughout India

FRLH 125646

Medical System - AFC

**8)** ***Amaranthus caudatus*** L.

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - Argentina, Bolivia, Ecuador, Peru

Introduced into - All other continents as a food source (Africa, Asia, Europe & Australia)

Indian distribution - Throughout India

FRLH 125317

Medical System - ASUC

Note - Introduced cultivated species

**9)** ***Amaranthus tricolor*** L.

Habit - Herb; Flowering and Fruiting - August to October

World native distribution - Bangladesh, Borneo, India, Jawa, Laos, , Malaya, Myanmar, Nepal, New Guinea, Philippines, Solomon Is., Sri Lanka, Sulawesi, Sumatra, Thailand, Vietnam

Introduced into - Most other parts of Asia & Africa, Australia (West), Cuba, France

Indian distribution - Throughout India

FRLH 125325

Medical System - ASC

**10)** ***Chenopodium album*** L.

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - Most of Asia, North Africa, Europe and Eastern U.S.A.

Introduced into - All other continents as a food source (Africa, Asia, Europe & Australia)

Indian distribution - Throughout India

Medical System - AFUSC

**11)** ***Cyathula capitata*** Moq.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Nepal, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttar Pradesh, W. Bengal

FRLH 125310

Medical System - F

**12)** ***Dysphania ambrosioides*** (L.) Mosyakin & Clemants

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - North America and South America

Introduced into - All other continents (Africa, Asia, Europe & Australia)

Indian distribution - Throughout India

FRLH 125648

Medical System - HFC

Note - Introduced naturalised species

**13)** ***Dysphania botrys*** (L.) Mosyakin & Clemants

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Afghanistan, China, India, Pakistan, Southern Europe, West Asia

Introduced into - Bolivia, North America, North Africa and North Europe, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Sikkim, Uttarakhand

FRLH 125540

Medical System - F

**Family – Amaryllidaceae (2 genera and 2 species)**

**14)** ***Allium jacquemontii*** Kunth

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Afghanistan, China, India, Pakistan, Tajikistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125468

**15)** ***Narcissus tazetta*** L.

Habit - Herb; Flowering and Fruiting - January to March

World distribution - Afghanistan, Albania, Algeria, Baleares, Canary Is., China Southeast, Corse, Cyprus, East Aegean Is., Egypt, France, Greece, Iran, Iraq, Italy, Japan, Kriti, Lebanon-Syria, Libya, Morocco, Palestine, Sardegna, Sicilia, Sinai, Spain, Tunisia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia

Introduced into - Australia, India, Korea, New Zealand, U.S.A.

Indian distribution - Cultivated species

Medical System - FU

Note - Naturalised in Himachal Pradesh and Jammu and Kashmir

**Family – Anacardiaceae (4 genera and 4 species)**

**16)** ***Cotinus coggygria*** Scop.

Habit - Shrub; Flowering and Fruiting - February to May

World distribution - Albania, Austria, Bulgaria, China North-Central, China South-Central, China Southeast, Czechoslovakia, East Himalaya, France, Greece, Hungary, India, Iran, Italy, Kazakhstan, Kriti, Lebanon-Syria, Nepal, North Caucasus, Pakistan, Romania, South European Russia, Switzerland, , Transcaucasus, Turkey, Turkmenistan, Ukraine, Yugoslavia

Introduced into - Great Britain, Korea, North America, Uzbekistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125470

Medical System - FC

**17)** ***Pistacia chinensis*** **subsp. integerrima** (J.L.Stewart) Rech.f.

Synonym - *Pistacia integerrima* J.L.Stewart

Habit - Tree; Flowering and Fruiting - March to May

World distribution - Afghanistan, India, Myanmar, Nepal, Pakistan, Transcaucasus

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttarakhand

FRLH 125469

Medical System - AU

Note - High Volume Traded species under trade name Kakarsinghi, Karkatasrngi

**18)** ***Rhus chinensis*** Mill.

Habit - Tree; Flowering and Fruiting - August to October

World distribution - Bangladesh, Cambodia, China, India, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Sumatra, Taiwan, Thailand, Vietnam

Introduced into - Turkey

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Rajasthan Sikkim, Uttarakhand, West Bengal

FRLH 125554

Medical System - FC

**19)** ***Toxicodendron wallichii*** (Hook.f.) Kuntze

Synonym - *Rhus wallichii* Hook.f.

Habit - Tree; Flowering and Fruiting - May to August

World distribution - China, India, Nepal, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand, West Bengal

FRLH 125471

Medical System - F

**Family – Apiaceae (6 genera and 7 species)**

**20)** ***Bupleurum falcatum*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Temperate Asia and Europe

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Sikkim, Tamil Nadu, Uttarakhand

FRLH 125252

Medical System - F

**21)** ***Bupleurum lanceolatum*** Wall. ex DC.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125632

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**22)** ***Heracleum candicans*** Wall. ex DC.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Mizoram, Sikkim, Uttarakhand

Medical System - FC

**23)** ***Sanicula elata*** Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (Central and South), China, India, Madagascar, Pakistan, South East Asia, Yemen

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125383

Medical System - F

**24)** ***Ligusticopsis wallichiana*** (DC.) Pimenov & Kljuykov

Synonym - *Selinum wallichianum* (DC.) Raizada & H.O.Saxena

Habit - Herb; Flowering and Fruiting - July to October

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand, West Bengal

FRLH 125501

Medical System - F

**25)** ***Ligusticum cf. marginatum*** C.B.Clarke

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, India, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125618

Note - Rare and endemic to Western Himalaya

**26)** ***Torilis japonica*** (Houtt.) DC.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Europe and temperate Asia (except Northern Asia)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Mizoram, Nagaland, Sikkim, Uttarakhand

FRLH 125334

**Family – Apocynaceae (3 genera and 4 species)**

**27)** ***Marsdenia lucida*** *Edgew. ex Madden*

Habit - Climbing herb; Flowering and Fruiting - June to September

World distribution - India, Nepal

Indian distribution - Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125346

Medical System - F

Note - Endemic to Himalayas

**28)** ***Trachelospermum lucidum*** (D.Don) K.Schum.

Habit - Shrub; Flowering and Fruiting - May to August

World distribution - China, India, Laos, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttar Pradesh, West Bengal

FRLH 125472

Medical System - F

**29)** ***Vincetoxicum auriculatum*** (Royle ex Wight) Kuntze

Habit - Climbing herb; Flowering and Fruiting - June to August

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125374

**30)** ***Vincetoxicum hirundinaria*** Medik.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - North Africa, Europe and Western Asia (India, Pakistan, Turkey)

Introduced into - Canada (Ontario) and U.S.A. (Michigan, New York)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125432

Medical System - F

**Family – Aquifoliaceae (1 genus and 1 species)**

**31)** ***Ilex dipyrena*** Wall.

Habit - Tree; Flowering and Fruiting - April to July

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125619

**Family – Araceae (3 genera and 6 species)**

**32)** ***Arisaema intermedium*** Blume

Habit - Herb; Flowering and Fruiting - June to August

World distribution - China, India, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Sikkim, West Bengal

FRLH 125657

Medical System - F

**33)** ***Arisaema tortuosum*** (Wall.) Schott

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Sri Lanka

Indian distribution - Almost throughout India

FRLH 125630

Medical System - F

**34)** ***Arisaema propinquum*** Schott

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China (Tibet), India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand, West Bengal

**35)** ***Remusatia hookeriana*** Schott

Habit - Herb; Flowering and Fruiting - May to August

World distribution - China, India, Myanmar, Nepal, Thailand

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand

FRLH 125348

**36)** ***Sauromatum*** sp. (yet unidentified)

Habit - Herb; Fruiting - August (only seen in fruiting)

Distribution - Probably endemic new taxon allied to *S. brevipes* (Hook.f.) N.E.Br.

Indian distribution - **Khokhan WLS, Kullu district, Himachal Pradesh**

FRLH 125393

Note - Found during fruiting near a waterfall growing in between dripping rock crevices

**37)** ***Sauromatum venosum*** (Dryand. ex Aiton) Kunth

Synonym - *Typhonium venosum* (Dryand. ex Aiton) Hett. & P.C.Boyce

Habit - Herb; Flowering and Fruiting - May to August

World distribution - Africa (Central and East), China, India, Myanmar, Nepal, Pakistan, Saudi Arabia, Yemen

Indian distribution - Bihar, Goa, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Rajasthan, Uttar Pradesh

FRLH 125274

Medical System - F

**Family – Araliaceae (2 genera and 3 species)**

**38)** ***Hedera nepalensis*** K.Koch

Habit - Climbing herb; Flowering and Fruiting - October to November

World distribution - Afghanistan, India, Myanmar, Nepal, Pakistan, Thailand

Indian distribution - Arunachal Pradesh, Bihar, Jammu & Kashmir, Himachal Pradesh, Maharashtra, Manipur, Mizoram, Sikkim, Uttarakhand, West Bengal

FRLH 125572

Medical System - F

**39)** ***Hydrocotyle himalaica*** P.K.Mukh.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, West Bengal

**Reported here as new addition to state flora of Himachal Pradesh**

FRLH 125442

**40)** ***Hydrocotyle sibthorpioides*** Lam.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (Central and West), Australia, China, India, Japan, Madagascar, Pakistan and South East Asia

Introduced into - Italy, Mauritius, U.S.A.
Indian distribution - Almost throughout India
FRLH 125605
Medical System - F

**Family – Aristolochiaceae (1 genus and 1 species)**

**41)** ***Aristolochia punjabensis*** Lace
Habit - Climbing herb; Flowering and Fruiting - April to August
World distribution - Pakistan, India
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125405
Note - Endemic to Western Himalaya

**Family – Asclepiadaceae (1 genus and 1 species)**

**42)** ***Periploca calophylla*** (Wight) Falc.
Habit - Climbing herb; Flowering and Fruiting - April to June
World distribution - China, India, Myanmar, Nepal, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand, Sikkim
FRLH 125451
Medical System - F

**Family – Asparagaceae (4 genera and 7 species)**

**43)** ***Asparagus filicinus*** Buch.-Ham. ex D.Don
Habit - Herb; Flowering and Fruiting - April to June
World distribution - Bangladesh, China, India, Myanmar, Nepal, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling)
FRLH 125416
Medical System - AC

**44)** ***Asparagus racemosus*** Willd.

Habit - Herb; Flowering and Fruiting - April to July

World distribution - Africa (Central), China, India, Madagascar, Nepal, Oman, Pakistan, South East Asia, Western Australia, Yemen

Introduced into - Jamaica, Mauritius, Rodrigues, Trinidad-Tobago

Indian distribution - Almost throughout India

FRLH 125422

Medical System - AFVTUS

Note - High Volume Traded species under trade name Shatavari, Shatawar

**45)** ***Ophiopogon intermedius*** D.Don

Habit - Herb; Flowering and Fruiting - May to August

World native distribution - Bangladesh, Cambodia, China, India, Myanmar, Nepal, Sri Lanka, Thailand, Tibet, Vietnam

Introduced into - Comoros, Mauritius, Réunion, Seychelles

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125284

Medical System - FC

**46)** ***Polygonatum cirrhifolium*** (Wall.) Royle

Habit - Herb; Flowering and Fruiting - April to August

World distribution - China, India, Mongolia, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand

FRLH 125488

Medical System - AC

Note - High Volume Traded species under trade name Salam Mishri, Meda, Mahameda

**47)** ***Polygonatum govanianum*** Royle

Habit - Herb; Flowering and Fruiting - May to July

World distribution - India, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125415

Medical System - FC

Note - Endemic to Western Himalaya

Misidentified in older literature as *Polygonatum multiflorum* (L.) All. which is a closely resembling European species not found in Himalayas.

**48)** ***Polygonatum verticillatum*** (L.) All.

Habit - Herb; Flowering and Fruiting - April to August

World distribution - Afghanistan, Europe, India, Nepal, North Caucasus, Pakistan, Transcaucasus, Turkey

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125414

Medical System - ATC

**49)** ***Yucca aloifolia*** L.

Habit - Shrub; Flowering and Fruiting - June to September

World native distribution - Eastern USA and Mexico (North America)

Introduced into - Argentina, Australia, Bahamas, Bangladesh, Bolivia, Cayman Is., Cuba, Dominican Republic, Galápagos, Haiti, India, Italy, Jamaica, Mauritius, New Caledonia, Pakistan, Portugal, Puerto Rico, Caribbean, Spain, Trinidad-Tobago, Tunisia, Uruguay, Windward Is.

Indian distribution - Himachal Pradesh and Sikkim

FRLH 125433

Medical System - F

Note - Naturalised exotic species

**Family – Asteraceae (38 genera and 58 species)**

**50)** ***Achillea millefolium*** L.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Throughout Northern hemisphere temperate regions (North America, Europe, Asia (North and West), India, Pakistan)

Introduced into - Africa (South), Australia, South America, South East Asia, Japan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Tamil Nadu

FRLH 125303

Medical System - HUSMC

Note - High Volume Traded species under trade name Brinjasif, Yarrow

**51)** ***Ageratina adenophora*** (Spreng.) R.M.King & H.Rob.

Synonym - *Eupatorium adenophorum* Spreng.

Habit - Herb; Flowering and Fruiting - January to March

World native distribution - Mexico

Introduced into - Algeria, Angola, Azores, Australia, California, Cambodia, Canary Is., , Cape Verde, China, Corse, Costa Rica, East Aegean Is., France, Germany, Greece, Hawaii, **India**, Jamaica, Jawa, Kriti, Laos, Lebanon-Syria, Madeira, Morocco, Nepal, New Zealand, Norfolk Is., Peru, Philippines, Portugal, Spain, South Africa, Thailand, Yugoslavia, Zimbabwe

Indian distribution - Almost throughout India

FRLH 125289

Medical System - F

Note - Naturalised and invasive species(uncommon in Khokhan WLS only seen near roadside)

**52)** ***Ainsliaea aptera*** DC.

Habit - Herb; Flowering and Fruiting - April to June

World distribution - Afghanistan, India, Myanmar, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125465

Medical System - F

**53)** ***Ainsliaea latifolia*** (D.Don) Sch.Bip.

Habit - Herb; Flowering and Fruiting - April to June

World distribution - Bangladesh, China, India, Laos, Malaya, Myanmar, Nepal, Pakistan, Philippines, Sumatra, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand

FRLH 125466

Medical System - F

**54)** ***Anaphalis busua*** (Buch.-Ham.) DC.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, West Bengal.

Medical System - F

**55)** ***Anaphalis contorta*** (D.Don) Hook.f.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Haryana, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125271

Medical System - F

**56)** ***Anaphalis margaritacea*** (L.) Benth. & Hook.f.

Habit - Herb; Flowering and Fruiting - August to October

World native distribution - China, India, Japan, Korea, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam and North America

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125279

Medical System - A

**57)** ***Anaphalis triplinervis*** (Sims) C.B.Clarke

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Nepal, Pakistan

Introduced into - Great Britain

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Nagaland, Sikkim, Uttarakhand

FRLH 125613

Medical System - F

**58)** ***Anaphalis sp.***

Habit - Herb; Flowering and Fruiting - August to October

Unidentified species with small plant size and small rosea colored flower heads with whitish grey leaves. Collected from Munjhag top in early September.

FRLH 125280

**59)** ***Arctium lappa*** L.

Habit - Herb; Flowering and Fruiting - June to August

World native distribution - Palearctic (almost entire Asia and Europe)

Introduced into - Australia (South East), Great Britain, North America, New Zealand

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125617

Medical System - HFC

**60)** ***Artemisia japonica*** Thunb.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Japan, Korea, Kuril Is., Laos, Myanmar, Nepal, Pakistan, Philippines, Primorye, Sakhalin, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

Medical System - FC

**61)** ***Artemisia roxburghiana*** Besser

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125354

Medical System - F

**62)** ***Artemisia scoparia*** Waldst. & Kit.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Almost entire Asia and Europe

Indian distribution - Himachal Pradesh, Jammu & Kashmir

Medical System - FC

**63)** ***Artemisia vestita*** Wall. ex Besser

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Mongolia, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125602

Medical System - FC

**64)** ***Aster verticillatus*** (Reinw.) Brouillet, Semple & Y.L.Chen

Synonym - *Rhynchospermum verticillatum* Reinw. ex Blume

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Japan, Jawa, Korea, Myanmar, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand

FRLH 125398

**65)** ***Cordiofontis flexuosa*** (Royle ex Lindl.) G.L.Nesom

Synonym - *Aster thomsonii* C.B.Clarke

Habit - Herb; Flowering and Fruiting - August to October

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125556

Medical System - F

Note - Endemic to Himalayas

**66)** ***Bidens biternata*** (Lour.) Merr. & Sherff

Habit - Herb; Flowering and Fruiting - June to October

World native distribution - Afghanistan, Africa, Australia, China, India, Japan, Korea, Oman, Pakistan, Saudi Arabia, South East Asia, Sri Lanka, Yemen

Introduced into - Cape Verde, Fiji, France, Gabon, Great Britain, Madeira, Réunion

Indian distribution - Almost throughout India

FRLH 125517

Medical System - FC

**67)** ***Bidens pilosa*** L.

Habit - Herb; Flowering and Fruiting - June to October

World native distribution - Neotropical (North and South America)

Introduced into - Most of Africa, Europe and Asia

Indian distribution - Almost throughout India

FRLH 125521

Medical System - F

Note - Naturalised and highly invasive species

**68)** ***Bidens tripartita*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Almost entire North America, Asia (except South East), Africa (North) and Europe

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125380

Medical System - FC

**69)** ***Carpesium abrotanoides*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, Albania, Altay, Austria, Belgium, Bulgaria, China, Czechoslovakia, Georgia, Germany, Greece, Hungary, India, Iran, Iraq, Italy, Japan, Kazakhstan, Korea, Nepal, Netherlands, North Caucasus, Pakistan, Poland, Romania, Switzerland, Taiwan, Transcaucasus, Turkey

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125311

Medical System - FC

**70)** ***Carpesium cernuum*** L.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Afghanistan, Austria, Borneo, Bulgaria, China, Czechoslovakia, France, Hungary, India, Iran, Italy, Japan, Korea, Manchuria, North Caucasus, Pakistan, Philippines, Primorye, Romania, Spain, Switzerland, Taiwan, Transcaucasus, Turkey, Ukraine, Yugoslavia

Introduced into - Australia (New South Wales, Queensland)

Indian distribution - Himachal Pradesh, Sikkim

FRLH 125296

Medical System - FC

**71)** ***Carpesium trachelifolium*** Less.

Habit - Herb; Flowering and Fruiting - August to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Taiwan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125370

**72)** ***Cirsium wallichii*** DC.

Habit - Herb; Flowering and Fruiting - June to October

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Tamil Nadu, Uttarakhand

Medical System - F

**73)** ***Cotula australis*** Hook.f.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Australia, Lesotho, Madagascar, New Zealand, Southern Africa

Introduced into - Azores, Baleares, Belgium, Bolivia, Canary Is., Colombia, Ecuador, Great Britain, Guatemala, Hawaii, India, Italy, Juan Fernández Is., Madeira, Maine, Mexico Northwest, New Caledonia, Norway, Peru, Portugal, Spain, Sri Lanka, Switzerland, Tristan da Cunha, Uruguay, U.S.A

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Kerala, Meghalaya, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125330

Note - Naturalised invasive species (though not abundant in Khokhan WLS)

**74)** ***Eschenbachia stricta*** (Willd.) Raizada

Synonym - *Conyza stricta* Willd.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, Algeria, Angola, Cameroon, Chad, China, Djibouti, Eritrea, Ethiopia, Guinea, India, Libya, Madagascar, Malawi, Morocco, Myanmar, Nepal, Nigeria, Oman, Pakistan, Palestine, Saudi Arabia, Sinai, Sudan, Thailand, Tunisia, Yemen, Zambia, Zaïre, Zimbabwe

Indian distribution - Almost throughout India

FRLH 125388

Medical System - F

**75)** ***Crassocephalum crepidioides*** (Benth.) S.Moore

Habit - Herb; Flowering and Fruiting - August to October

World native distribution - Africa (Central and South), Madagascar

Introduced into - Australia, China, India, Japan, Korea, Nepal, South East Asia, Sri Lanka, U.S.A.

Indian distribution - Almost throughout India

Medical System - FC

Note - Naturalised invasive species (not common in Khokhan WLS)

**76)** ***Dichrocephala integrifolia*** (L.f.) Kuntze

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (Central and South), China, India, Japan, Madagascar, South East Asia, Sri Lanka, Taiwan, Western Asia

Introduced into - Australia, Guatemala, Italy, Mauritius, New Caledonia

Indian distribution - Almost throughout India

Medical System - F

**77)** ***Duhaldea cuspidata*** (DC.) Anderb.

Synonym - *Inula cuspidata* (DC.) C.B. Clarke

Habit - Herb; Flowering and Fruiting - September to October

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125594

Medical System - F

Note - Endemic to Himalayas

**78)** ***Erigeron acris*** **var.** ***multicaulis*** (Wall. ex DC.) C.B.Clarke

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand

FRLH 125292

Note - Endemic to Himalayas

**79)** ***Erigeron annuus*** (L.) Desf

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - North America

Introduced into - Europe, India, Japan, Korea, Taiwan, Turkey, Ukraine, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125600

Note - Highly invasive naturalised exotic species in Temperate Western Himalayas

**80)** ***Erigeron bonariensis*** L.

Synonym - *Conyza bonariensis* (L.) Cronquist

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Latin America

Introduced into - Africa (West & North), Germany, India, Myanmar, New Caledonia, New Zealand, Pakistan, Sri Lanka, Western Asia, Turkey, Yemen

Indian distribution - Almost throughout India

Medical System - F

Note - Naturalised and invasive species

**81)** ***Erigeron canadensis*** L.

Synonym - *Conyza canadensis* (L.) Cronquist

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - American Continent (North & South)

Introduced into - Most parts of Europe, Africa, Asia and Australia

Indian distribution - Almost throughout India

FRLH 125309

Medical System - HFC

Note - Naturalised invasive species

**82)** ***Eschenbachia japonica*** (Thunb.) J.Kost.

Synonym - *Conyza japonica* (Thunb.) Less. ex DC.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, China, India, Japan, Jawa, Myanmar, Nansei-shoto, Nepal, Pakistan, Philippines, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125636

Medical System - F

**83)** ***Galinsoga parviflora*** Cav.

Habit - Herb; Flowering and Fruiting - April to August

World native distribution - Latin America

Introduced into - Most parts of Asia, North America, Europe, Africa and Australia

Indian distribution - Almost throughout India

FRLH 125524

Medical System - FC

Note - Naturalised invasive species

**84)** ***Gamochaeta pensylvanica*** (Willd.) Cabrera

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - North & South America

Introduced into - Australia, Azores, Bangladesh, Canary Is., China, France, India, Iraq, Italy, Madeira, Mozambique, Nepal, Pakistan, Palestine, Portugal, Sicilia, Spain, South Africa, Sri Lanka, Swaziland, Taiwan

Indian distribution - Almost throughout India

FRLH 125434

Note - Naturalised invasive species

**85)** ***Gynura cusimbua*** (D.Don) S.Moore

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Bangladesh, China, India, Myanmar, Nepal, Thailand

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand and North East states

FRLH 125562

Medical System - F

**86)** ***Jacobaea analoga*** (DC.) Veldkamp

Synonym - *Senecio chrysanthemoides* DC., *Senecio laetus* Edgew.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Vietnam

Indian distribution - Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125283

Medical System - F

**87)** ***Jurinea heteromalla*** (D.Don) N.Garcia, Herrando & Susanna

Synonym - *Saussurea heteromalla* (D. Don) Hand.-Mazz.,

*Lipschitziella heteromalla* (D. Don) Shruti Kasana & Arun K. Pandey

Habit - Herb; Flowering and Fruiting - March to June

World distribution - Afghanistan, India, Iran, Nepal, Pakistan

Indian distribution - Bihar, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125448

Medical System - F

**88)** ***Lactuca dolichophylla*** Kitam.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125518

**89)** ***Melanoseris brunoniana*** (Wall. ex DC.) N.Kilian & Ze H.Wang

Synonyms - *Prenanthes brunoniana* Wall. ex DC.,

*Lactuca brunoniana* (Wall. ex DC.) C.B. Clarke

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125563

Medical System - F

Note - Endemic to Himalayas

**90)** ***Melanoseris macrorhiza*** (Royle) N.Kilian

Synonym - *Lactuca macrorhiza* (Royle) Hook.f.

Habit - Herb; Flowering and Fruiting - August to September

World distribution - Afghanistan, China, India, Iran, Nepal, Pakistan, Tajikistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim Uttarakhand

Medical System - F

**91)** ***Myriactis nepalensis*** Less.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Jawa, Myanmar, Nepal, New Guinea, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125298

**92)** ***Myriactis wallichii*** DC.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Iran, Myanmar, Nepal, North Caucasus, Pakistan, Tajikistan, Transcaucasus, Uzbekistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kaashmir, Sikkim, Uttarakhand

**93)** ***Oreoseris gossypina*** (Royle) X.D.Xu & V.A.Funk

Synonym - *Gerbera gossypina* (Royle) Beauverd

Habit - Herb; Flowering and Fruiting - April to July

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125407

Medical System - F

**94)** ***Pseudognaphalium affine*** (D.Don) Anderb.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, Cambodia, China, India, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Taiwan, Thailand, Transcaucasus, Turkey, Vietnam

Indian distribution - All Himalayan states and Meghalaya

**95)** ***Picris hieracioides*** **subsp. kaimaensis** (Kitam.) Kitam.

Habit - Herb; Flowering and Fruiting - April to July

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125360

**96)** ***Phagnalon niveum*** Edgew.

Habit - Herb; Flowering and Fruiting - April to July

World distribution - Afghanistan, China (Tibet), India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125461

**97)** ***Sigesbeckia orientalis*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Australia, Asia, North West Europe, Africa (Central), Madagascar

Indian distribution - Almost throughout India

FRLH 125585

Medical System - FSC

**98)** ***Solidago virgaurea*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, Algeria, Cambodia, Europe, India, Iran, Japan, Mongolia, Morocco, Pakistan, Turkey, Ukraine, Vietnam, West Siberia

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125273

Medical System - H

**99)** ***Sonchus asper*** (L.) Hill

Habit - Herb; Flowering and Fruiting - May to September

World native distribution - Palearctic (North Africa, Europe and temperate Asia)

Indian distribution - Almost throughout India

FRLH 125326

Medical System - F

**100)** ***Sonchus wightianus*** DC.

Habit - Herb; Flowering and Fruiting - April to September

World distribution - Afghanistan, Bangladesh, China, India, Inner Mongolia, Jawa, Laos, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125378

Medical System - F

**101)** ***Synotis rufinervis*** (DC.) C.Jeffrey & Y.L.Chen

Habit - Herb; Flowering and Fruiting - August to October

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125350

Note - Endemic to Western Himalaya and Nepal

**102)** ***Tagetes minuta*** L.

Habit - Herb; Flowering and Fruiting - August to November

World native distribution - South America

Introduced into - All other continents (Asia, Africa, Australia, Europe and North America)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125573

Medical System - F

Note - Naturalised invasive species

**103)** ***Taraxacum*** sp.

Habit - Herb; Flowering and Fruiting - March to June

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Note - Taraxacum is a large complex genus with several microspecies known from Kullu district, so I am restricting here upto genus only. In Khokhan WLS I have come across a couple of species and one of them is likely *Taraxacum pseudobicorne* Soest (a poorly known endemic sp.) which I got identified in a personal communication with Dr. Jan Kirschner (Taraxacum expert), but I still need to work in detail to conclude its identity.

Medical System - AHFM

**104)** ***Tragopogon dubius*** Scop.

Habit - Herb; Flowering and Fruiting - April to June

World distribution - Afghanistan, China, Europe, India, Iraq, Morocco, Pakistan, Saudi Arabia, Transcaucasus, Turkey

Indian distribution - Himachal Pradesh, Jammu & Kashmir

**105)** ***Tricholepis elongata*** DC.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125550

Note - Endemic to Himalaya

**106)** ***Tricholepis karensium*** Kurz

Habit - Herb; Flowering and Fruiting - September to October

World distribution - India, China, Myanmar, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir

FRLH 125603

Note - Very rare occurrence in India (known from only couple of localities), found at single locality in Khokhan WLS

**107)** ***Xanthium strumarium*** L.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, Algeria, China, India, Iran, Lebanon-Syria, Mongolia, Morocco, Myanmar, Southern Europe, Pakistan, Sri Lanka, Taiwan, Thailand

Indian distribution - Almost throughout India

FRLH 125624

Medical System - ATSF

**Family – Balsaminaceae (1 genus and 4 species)**

**108)** ***Impatiens amphorata*** Edgew.

Synonym - *Impatiens devendrae* Pusalkar

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125578

Note - Endemic to Western Himalaya and Nepal

*Impatiens amphorata* Edgew. is a species described from Shimla in 1846, I consider recently described species *viz. Impatiens devendrae* Pusalkar as a heterotypic synonym of this species.

**109)** ***Impatiens edgeworthii*** Hook.f.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India and Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125545

Note - Endemic to Western Himalaya and Nepal

**110)** ***Impatiens sulcata*** Wall.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

**111)** ***Impatiens tricornis*** Lindl.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125511

Medical System - F

**Family – Begoniaceae (1 genus and 1 species)**

**112)** ***Begonia dioica*** Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Mizoram, Punjab, Sikkim, Uttaranchal, West Bengal (Darjeeling)

FRLH 125555

Medical System - SR

**Family – Berberidaceae (1 genus and 3 species)**

**113)** ***Berberis aristata*** DC.

Habit - Shrub; Flowering and Fruiting - April to July

World distribution - China, India, Nepal

Indian distribution - Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttarakhand

Medical System - AFTUS

Note - High Volume Traded species under trade name Daruhaldi, Daruharidra

**114)** ***Berberis chitria*** Buch.-Ham. ex Lindl.

Habit - Shrub; Flowering and Fruiting - April to July

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Jammu & Kashmir, Himachal Pradesh, Uttarakhand

FRLH 125417

Medical System - AF

Note - Endemic to Himalayas

**115)** ***Berberis lycium*** Royle

Habit - Shrub; Flowering and Fruiting - March to May

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Sikkim, Tamil Nadu, Uttarakhand

Medical System - AU

Note - High Volume Traded species under trade name Daryhaldi, Chitra

**Family – Betulaceae (3 genera and 4 species)**

**116)** ***Alnus nepalensis*** D.Don

Habit - Tree; Flowering - September to November

World distribution - Bangladesh, China, India, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand, West Bengal

FRLH 125435

Medical System -FC

**117)** ***Alnus nitida*** (Spach) Endl.

Habit - Tree; Flowering- September to November

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125320

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**118)** ***Betula alnoides*** Buch.-Ham. ex D.Don

Habit - Tree; Flowering and Fruiting - October to May

World distribution - Bangladesh, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Nagaland, Manipur, Meghalaya, Mizoram, Sikkim, Uttarakhand, Tripura, West Bengal

FRLH 125436

Medical System - F

**119)** ***Carpinus viminea*** Lindl. ex Wall.

Habit - Tree; Flowering and Fruiting - April to August

World distribution - Bangladesh, China, India, Korea, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand, West Bengal

FRLH 125437

**Family – Bignoniaceae (1 genus and 1 species)**

**120)** ***Incarvillea diffusa*** Royle

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Nepal

Indian distribution - Himachal Pradesh, Jammu and Kashmir, Uttarakhand

FRLH 125505

Medical System – SR

Note - Rare in India, only found at single locality in Khokhan WLS

**Family – Boraginaceae (1 genus and 2 species)**

**121)** ***Cynoglossum lanceolatum*** Forssk.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Africa (Central and South), China, India, Madagascar, Nepal, Pakistan, Saudi Arabia, South East Asia, Sri Lanka, Yemen

Indian distribution - Almost throughout India

Medical System - AC

**122)** ***Cynoglossum wallichii*** G.Don

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, Bangladesh, China, India, Kyrgyzstan, Laos, Myanmar, Nepal, Pakistan, Tajikistan

Indian distribution - Arunachal Pradesh, Daman & Diu, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Punjab, Sikkim, Uttarakhand, Uttar Pradesh

**Family – Brassicaceae (5 genera and 5 species)**

**123)** ***Arabis amplexicaulis*** Edgew.

Habit - Herb; Flowering and Fruiting - April to June

World distribution - Afghanistan, India, Mongolia, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125463

Medical System - F

**124)** ***Capsella bursa-pastoris*** (L.) Medik.

Habit - Herb; Flowering and Fruiting - March to June

World native distribution - Palearctic (North Africa, Europe and temperate Asia)

Indian distribution - Almost throughout India.

Medical System - HFC

**125)** ***Erysimum hieraciifolium*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Temperate Asia (China, India, Kazakhstan, Mongolia, Pakistan, Russia, Tajikistan, Uzbekistan), Europe

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125253

**126)** ***Lepidium virginicum*** L.

Habit - Herb; Flowering and Fruiting - March to June

World native distribution - North America

Introduced into - Asia (China, India, Korea, Pakistan, Saudi Arabia), Australia, South America, Africa(South and North), Europe

Indian distribution - Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125328

Medical System - FC

Note - Naturalised exotic species

**127)** ***Nasturtium officinale*** W.T.Aiton

Habit - Herb; Flowering and Fruiting - April to August

World native distribution - Europe, North Africa, West Asia (Afghanistan, India, Pakistan, Iran, Iraq, Kazakhstan, Saudi Arabia, Turkey, Turkmenistan, Ukraine, Uzbekistan)

Indian distribution - Almost throughout India

FRLH 125584

Medical System - FC

**Family – Buxaceae (2 genera and 2 species)**

**128)** ***Buxus wallichiana*** Baill.

Habit - Tree; Flowering and Fruiting - April to June

World distribution - Afghanistan, India, Nepal, Pakistan, Thailand

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125479

Medical System - F

**129)** ***Sarcococca saligna*** (D.Don) Müll.Arg.

Habit - Shrub; Flowering and Fruiting - September to May

World distribution - China, India, Jawa, Lesser Sunda Is., Mexico Southwest, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125399
Medical System - F

**Family – Cactaceae (1 genus and 1 species)**

**130)** ***Opuntia elatior*** Mill.
Habit - Herb; Flowering and Fruiting - April to September
World native distribution - South America (Colombia, Costa Rica, Panama)
Indian distribution - Introduced almost throughout India
Medical System - FC
Note - Naturalised exotic species, only seen near roadsides in border areas of Khokhan.

**Family – Campanulaceae (1 genus and 1 species)**

**131)** ***Campanula pallida*** Wall.
Habit - Herb; Flowering and Fruiting - March to July
World distribution - Afghanistan, Bangladesh, China, India, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal
FRLH 125299

**Family – Cannabaceae (2 genera and 2 species)**

**132)** ***Cannabis sativa*** L.
Habit - Herb; Flowering and Fruiting - February to August
World native distribution - Afghanistan, India, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan
Indian distribution - Almost throughout India
Medical System - AHVTUSFMC

**133)** ***Celtis tetrandra*** Roxb.
Habit - Tree; Flowering and Fruiting - April to June

World distribution - Bangladesh, China, India, Jawa, Laos, Lesser Sunda Is., Myanmar, Nepal, Pakistan, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh

FRLH 125258

Medical System - S

**Family – Caprifoliaceae (3 genera and 3 species)**

**134)** ***Dipsacus inermis*** Wall.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, Bangladesh, China, India, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttar Pradesh, West Bengal

FRLH 125641

Medical System - F

**135)** ***Leycesteria formosa*** Wall.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

Medical System - F

**136)** ***Valeriana jatamansi*** Jones ex Roxb.

Habit - Herb; Flowering and Fruiting - April to July

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttar Pradesh

FRLH 125650

Medical System - AF

Note - High Volume Traded species under trade name Musakbala, Tagar ganth, Sugandhbala, Asaroon, Tagara

**Family – Caryophyllaceae (4 genera and 6 species)**

**137)** ***Acanthophyllum cerastioides*** (D.Don) Madhani & Zarre

Synonym - *Gypsophila cerastioides* D.Don

Habit - Herb; Flowering and Fruiting - April to July

World distribution - China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125358

Medical System - F

**138)** ***Schizotechium monospermum*** (Buch.-Ham. ex D.Don)

Synonym - *Stellaria monosperma* Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125381

**139)** ***Silene edgeworthii*** Bocquet

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125276

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**140)** ***Silene vulgaris*** (Moench) Garcke

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Palearctic (North Africa, Europe and most of temperate Asia)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

**141)** ***Stellaria aquatica*** (L.) Scop.

Habit - Herb; Flowering and Fruiting - March to July

World distribution - Palearctic (Europe and most of temperate Asia)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand

FRLH 125577

Medical System - FC

**142)** ***Stellaria media*** (L.) Vill.

Habit - Herb; Flowering and Fruiting - March to July

World distribution - Palearctic (North Africa, Europe and most of temperate Asia)

Indian distribution - Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

Medical System - HMC

**Family – Celastraceae (2 genera and 3 species)**

**143)** ***Euonymus echinatus*** Wall.

Habit - Shrub; Flowering and Fruiting - March to July

World distribution - Bangladesh, China, India, Myanmar, Nepal, Taiwan, Thailand,

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand, West Bengal

FRLH 125483

**144)** ***Euonymus tingens*** Wall.

Habit - Shrub; Flowering and Fruiting - April to July

World distribution - China, India, Myanmar, Nepal

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Uttarakhand

FRLH 125481

Medical System - A

**145)** ***Parnassia nubicola*** Wall. ex Royle

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttarakhand

FRLH 125389

Medical System - F

**Family – Commelinaceae (3 genera and 4 species)**

**146)** ***Commelina benghalensis*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa, China, India, Japan, Korea, Pakistan, Saudi Arabia, Sri Lanka, South East Asia, Yemen

Indian distribution - Almost throughout India

Medical System - AFSC

**147)** ***Commelina paludosa*** Blume

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, Borneo, Cambodia, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, Pakistan, Sulawesi, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

Medical System - FC

**148)** ***Cyanotis vaga*** (Lour.) Schult. & Schult.f.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (Central), Bangladesh, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, Taiwan, Thailand, Vietnam, Yemen

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125386

**149)** ***Murdania nudiflora*** (L.) Brenan

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Australia and Asia (China, India, Nepal, Pakistan, SE Asia)

Indian distribution - Almost throughout India

FRLH 125534

**Family – Coriariaceae (1 genus and 1 species)**

**150)** ***Coriaria napalensis*** Wall.

Habit - Shrub; Flowering and Fruiting - March to June

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125404

Medical System - F

**Family – Cornaceae (2 genera and 3 species)**

**151)** ***Alangium chinense*** (Lour.) Harms

Habit - Tree; Flowering and Fruiting - June to August

World distribution - Africa (Central), Bangladesh, Cambodia, China, India, Jawa, Laos, Lesser Sunda Is., Nepal, Philippines, Taiwan, Thailand, Vietnam

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tripura, Uttar Pradesh, West Bengal

FRLH 125570

**152)** ***Cornus capitata*** Wall.

Habit - Tree; Flowering and Fruiting - May to October

World distribution - China, India, Laos, Myanmar, Nepal, Pakistan, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Sikkim, Meghalaya, Nagaland, Uttarakhand

FRLH 125403

Note - Wild edible fruit species

**153)** ***Cornus macrophylla*** Wall.

Habit - Tree; Flowering and Fruiting - April to September

World distribution - Afghanistan, China, India, Japan, Korea, Myanmar, Nepal, Pakistan, Taiwan

Indian distribution - Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal

FRLH 125475

**Family – Convolvulaceae (2 genera and 3 species)**

**154)** ***Cuscuta reflexa*** Roxb.

Habit - Climbing holoparasitic herb; Flowering and Fruiting - September to December

World distribution - Afghanistan, Bangladesh, China, India, Jawa, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125576

Medical System - AFUS

**155)** ***Ipomoea nil*** (L.) Roth

Habit - Climbing herb; Flowering and Fruiting - July to September

World native distribution - Latin America

Introduced into - Almost entire Paleotropics (Africa & Asia) and Australia

Indian distribution - Almost throughout India

Medical System - ASFC

Note - Naturalised invasive species

Note - High Volume Traded species under trade name Kaladana

**156)** ***Ipomoea purpurea*** (L.) Roth

Habit - Climbing herb; Flowering and Fruiting - July to September

World distribution - Latin America

Introduced into - Almost entire Paleotropics (Africa & Asia), South Europe & Australia

Indian distribution - Almost throughout India

Medical System - FC

Note - Naturalised invasive species

**Family – Crassulaceae (3 genera and 4 species)**

**157)** ***Rosularia adenotricha*** (Wall. ex Edgew.) C.-A.Jansson

Habit - Herb; Flowering and Fruiting - April to July

World distribution - Afghanistan, Gulf States, India, Nepal, Oman, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125261

**158)** ***Sedum multicaule*** Wall. ex Lindl.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal

FRLH 125586

**159)** ***Sedum sinuata*** (Royle ex Edgew.) S.H.Fu

Synonym - *Rhodiola trifida* H.Jacobsen

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

**160)** ***Sinocrassula indica*** (Decne.) A.Berger

Habit - Herb; Flowering and Fruiting - August to September

World distribution - China, India, Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125302

**Family – Cucurbitaceae (3 genera and 3 species)**

**161)** ***Cyclanthera pedata*** (L.) Schrad.

Habit - Climbing herb; Flowering and Fruiting - July to September

World native distribution - Latin America (Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Venezuela)

Introduced into - China, India, Réunion

Indian distribution - Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

Cultivated vegetable species

FRLH 125308

Medical System - F

**162)** ***Solena heterophylla*** Lour.

Habit - Climbing herb; Flowering and Fruiting - May to September

World distribution - Afghanistan, Bangladesh, Cambodia, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125344

Medical System - FC

**163)** ***Trichosanthes bracteata*** (Lam.) Voigt

Habit - Climbing herb; Flowering and Fruiting - May to September

World distribution - Bangladesh, China, India, Myanmar, Nepal, Sri Lanka

Indian distribution - Andaman & Nicobar Islands, Arunachal Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Tamil Nadu, Tripura, Uttarakhand, West Bengal.

FRLH 125426

Medical System - AFSC

**Family – Cyperaceae (4 genera and 7 species)**

**164)** ***Carex cruciata*** Wahlenb.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, Borneo, China, India, Japan, Lesser Sunda Is., Malaya, Myanmar, Nepal, Sumatera, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125607

Medical System - F

**165)** ***Cyperus alulatus*** J.Kern

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Afghanistan, India, Nepal, Oman, Pakistan

Indian distribution - Almost throughout India

**166)** ***Cyperus cyperoides*** (L.) Kuntze

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (Central & South), Australia, China, India, Japan, Korea, Madagascar, Nepal, Pakistan, South East Asia, Sri Lanka, Taiwan

Indian distribution - Almost throughout India

FRLH 125548

Medical System - F

**167)** ***Cyperus michelianus*** (L.) Delile

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Himalaya, Sri Lanka, China, Japan, Jawa, Laos, Malaya & Myanmar

Indian distribution - Assam, Gujarat, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Meghalaya, Punjab, Rajasthan, Tripura, Uttar Pradesh

FRLH 125621

**168)** ***Cyperus squarrosus*** L.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - America, Africa, tropical Asia and Australia (widespread)

Indian distribution - Almost throughout India

FRLH 125549

**169)** ***Erioscirpus comosus*** (Wall.) Palla

Synonym - *Eriophorum comosum* (Wall.) Nees

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, Bangladesh, China, India, Iran, Myanmar, Nepal, Oman, Pakistan, Vietnam

Indian distribution - Almost throughout India

FRLH 125539

**170)** ***Fimbristylis dichotoma*** (L.) Vahl

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Pan Tropical (Africa, America, Asia, and Australia)

Indian distribution - Almost throughout India

FRLH 125316

Medical System - SR

**Family – Dioscoreaceae (1 genus and 3 species)**

**171)** ***Dioscorea bulbifera*** L.

Habit - Climbing herb; Flowering and Fruiting - July to September

World distribution - Africa (Central), China, India, Japan, Korea, Madagascar, Pakistan, South East Asia, Sri Lanka, Taiwan

Indian distribution - Almost throughout India

FRLH 125623

Medical System - AFVTUSC

Note - High Volume Traded species under trade name Varahi kand, Varahi

**172)** ***Dioscorea deltoidea*** Wall. ex Griseb.

Habit - Climbing herb; Flowering and Fruiting - June to September

World distribution - Bangladesh, China, India, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand

FRLH 125476

Medical System – FMC

Note - Threatened and traded species locally known as Singali-Mingali

**173)** ***Dioscorea melanophyma*** Prain & Burkill

Habit - Climbing herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, China, India, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125599

**Family – Ebenaceae (1 genus and 2 species)**

**174)** ***Diospyros kaki*** L.f.

Habit - Tree; Flowering and Fruiting - April to September

World distribution - China, India (North East), Taiwan, Vietnam

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Nagaland, Meghalaya

Note - Cultivated fruit species in Western Himalaya

**175)** ***Diospyros lotus*** L.

Habit - Tree; Flowering and Fruiting - April to September

World distribution - Afghanistan, China, India, Iran, Korea, Nepal, North Caucasus, Pakistan, Tajikistan, Transcaucasus, Turkey

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, West Bengal (Darjeeling)

FRLH 125447

Medical System - FC

**Family – Elaeagnaceae (1 genus and 1 species)**

**176)** ***Elaeagnus umbellata*** Thunb.

Habit - Shrub; Flowering and Fruiting - March to July

World distribution - Afghanistan, China, India, Japan, Korea, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Manipur, Sikkim, Uttarakhand

FRLH 125259

Medical System - FC

**Family – Ericaceae (2 genera and 2 species)**

**177)** ***Lyonia ovalifolia*** (Wall.) Drude

Habit - Tree; Flowering and Fruiting - May to July

World distribution - Bangladesh, Cambodia, China, India, Japan, Laos, Malaya, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand, West Bengal
FRLH 125401
Medical System - FC

**178)** ***Rhododendron arboreum*** Sm.
Habit - Tree; Flowering and Fruiting - March to June
World distribution - China, India, Myanmar, Nepal, Pakistan, Sri Lanka
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand and West Bengal (Darjeeling)
FRLH 125459
Medical System - AFTSC
Note - High Volume Traded species under trade name Buras, GularrhPhool

**Family – Euphorbiaceae (2 genera and 2 species)**

**179)** ***Euphorbia helioscopia*** L.
Habit - Herb; Flowering and Fruiting - April to August
World distribution - Palearctic (North Africa, Europe and most of temperate Asia)
Indian distribution - Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh
FRLH 125260
Medical System - FC
Note - Naturalised invasive species (mostly seen in village cultivated land/orchards)

**180)** ***Euphorbia heterophylla*** L.
Habit - Herb; Flowering and Fruiting - Throughout the year (except peak winter season)
World native distribution - North and South America
Introduced into - Africa and Asia (China, India, Middle East, Pakistan, Sri Lanka, SE)
Indian distribution - Throughout India (Tropical)
FRLH 125305
Note - Naturalised invasive species (mostly seen in village cultivated land/orchards)

**Family – Fabaceae (22 genera and 26 species)**

**181)** ***Biancaea decapetala*** (Roth) O.Deg.

Synonym - *Caesalpinia decapetala* (Roth) Alston

Habit - Shrub; Flowering and Fruiting - March to July

World distribution - Bangladesh, China, India, Japan, Jawa, Korea, Laos, Lesser Sunda Is., Malaya, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Sulawesi, Sumatra, Taiwan, Thailand, Vietnam, Yemen

Indian distribution - Almost throughout India (except NE India and Islands)

FRLH 125506

Medical System - AF

**182)** ***Campylotropis speciosa*** (Royle ex Schindl.) Schindl.

Habit - Shrub; Flowering and Fruiting - August to September

World distribution - Bangladesh, China, India, Nepal

Indian distribution - Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125546

**183)** ***Dalbergia sissoo*** Roxb. ex DC.

Habit - Tree; Flowering and Fruiting - May to July

World distribution - Afghanistan, Bangladesh, India, Iran, Myanmar, Nepal, Pakistan

Indian distribution - Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttarakhand

FRLH 125496

Medical System - ATUSC

**184)** ***Flemingia fruticulosa*** Wall. ex Benth.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Madhya Pradesh, Manipur, Meghalaya, Tripura, Uttar Pradesh, Uttarakhand and West Bengal

FRLH 125438

**185)** ***Hylodesmum podocarpum*** (DC.) H.Ohashi & R.R.Mill

Synonym - *Desmodium podocarpum* DC.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Philippines, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Uttarakhand, West Bengal

FRLH 125342

**186)** ***Indigofera cassioides*** Rottler ex DC.

Habit - Shrub; Flowering and Fruiting - April to August

World distribution - Bangladesh, Cambodia, China, India, Laos, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125321

Medical System - F

**187)** ***Indigofera heterantha*** Wall. ex Brandis

Habit - Shrub; Flowering and Fruiting - April to August

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Throughout Himalayas from Jammu & Kashmir to Arunachal Pradesh

FRLH 125513, 125427

Medical System - F

**188)** ***Lathyrus aphaca*** L.

Habit - Herb; Flowering and Fruiting - March to May

World distribution - North Africa, South Europe, Western Asia, India, Pakistan, Uzbekistan

Indian distribution - Almost throughout India

Medical System - F

**189)** ***Lathyrus sphaericus*** Retz.

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Africa (North and Central), South Europe, Western Asia, India, Pakistan

Indian distribution - Almost throughout India (except South and NE India)

Medical System - F

**190)** ***Leptodesmia microphylla*** (Thunb.) H.Ohashi & K.Ohashi

Synonym - *Desmodium microphyllum* (Thunb.) DC.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Bangladesh, Cambodia, China, India, Japan, Jawa, Laos, Sunda Is., Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Sulawesi, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

**191)** ***Lespedeza cuneata*** (Dum.Cours.) G.Don

Synonyms - *Lespedeza juncea* var. *sericea* (Miq.) F.B.Forbes & Hemsl.,

*Lespedeza sericea* Miq.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Inner Mongolia, Japan, Korea, Mongolia, Nepal, Pakistan, Russia

Indian distribution - Arunachal Pradesh, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Rajasthan, Sikkim, Uttarakhand, West Bengal

FRLH 125307

Medical System - FC

**192)** ***Lespedeza juncea* var. *variegata*** (Cambess.) Ali

Synonym - *Lespedeza kanaoriensis* Cambess., *Lespedeza variegata* Cambess.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Japan, Korea, Mongolia, Nepal,

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125568

Medical System - FC

Note - Endemic to Himalayas

**193)** ***Lotus corniculatus*** L.

Habit - Herb; Flowering and Fruiting - April to June

World native distribution - Afghanistan, North Africa, Europe, Western and Northern Asia (India, Myanmar, Nepal, Pakistan)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - FC

**194)** ***Medicago polymorpha*** L.

Habit - Herb; Flowering and Fruiting - April to September

World distribution - Afghanistan, North Africa, Europe, Western and Northern Asia, India, Nepal, Pakistan

Indian distribution - Almost throughout India, except Islands

FRLH 125557

Medical System - F

**195)** ***Ototropis multiflora*** (DC.) H.Ohashi & K.Ohashi

Synonym - *Desmodium multiflorum* DC.

Habit - Shrub; Flowering and Fruiting - July to September

World distribution - Bangladesh, China, India, Laos, Myanmar, Nepal, Pakistan, Taiwan, Thailand

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya Mizoram, Nagaland, Punjab, Sikkim, Uttarakhand, West Bengal

FRLH 125520

**196)** ***Parochetus communis*** Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, China, India, Jawa, Lesser Sunda Is., Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam

Indian distribution - Throughout Himalaya, Karnataka, Meghalaya, Tamil Nadu, West Bengal

Medical System - FC

**197)** ***Phaseolus coccineus*** L.

Habit - Climbing herb; Flowering and Fruiting - August to October

World native distribution - Central America and Mexico

Introduced into - Asia, Europe and Eastern Africa as a food crop
Indian distribution - Himachal Pradesh, Sikkim, Uttarakhand
Cultivated Vegetable species

**198)** ***Rhynchosia himalensis*** Benth. ex Baker
Habit - Climbing herb; Flowering and Fruiting - August to October
World distribution - China, India, Myanmar, Nepal, Pakistan
Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125509

**199)** ***Robinia pseudoacacia*** L.
Habit -Tree; Flowering and Fruiting - April to August
World native distribution - U.S.A. (East)
Introduced into - Asia, Europe, Africa, South America and New Zealand
Indian distribution - Himachal Pradesh, Uttarakhand
FRLH 125457
Medical System - HC
Note - Cultivated species, now naturalised with invasive potential

**200)** ***Senna septemtrionalis*** (Viv.) H.S.Irwin & Barneby
Habit - Shrub; Flowering and Fruiting - May to September
World native distribution - Central America and Mexico
Introduced into - Pantropical region (Asia, Australia, Africa, South America)
Indian distribution - Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal
FRLH 125338
Note - Only couple of plants were found in Chesta village near house, so likely grown not escape.

**201)** ***Sunhangia elegans*** (DC.) H.Ohashi & K.Ohashi
Synonym - *Desmodium elegans* DC., *Ototropis elegans* (DC.) H. Ohashi & K. Ohashi
Habit - Shrub; Flowering and Fruiting - June to September
World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Sikkim, Uttarakhand, West Bengal

FRLH 125366

Medical System - FC

**202)** ***Trifolium repens*** L.

Habit - Herb; Flowering and Fruiting - March to July

World native distribution - Palearctic (North Africa, Europe and temperate Asia except East)

Indian distribution - Almost throughout Himalayas, Gujarat, Madhya Pradesh, Rajasthan, Tamil Nadu, West Bengal

FRLH 125428

Medical System - HC

**203)** ***Trifolium pratense*** L.

Habit - Herb; Flowering and Fruiting - March to August

World native distribution - Palearctic (North Africa, Europe and temperate Asia except East)

Indian distribution - Throughout Himalaya

Medical System - HMC

**204)** ***Vicia bakeri*** Ali

Habit - Climbing herb; Flowering and Fruiting - July to September

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125352

Medical System - F

**205)** ***Vigna vexillata*** (L.) A.Rich.

Habit - Climbing herb; Flowering and Fruiting - July to September

World native distribution - Pantropical (Asia, Africa, Latin America and Australia)

Indian distribution - Assam, Bihar, Gujarat, Karnataka, Kerala, Himachal Pradesh, Maharashtra, Tamil Nadu, Uttarakhand

FRLH 125516

Medical System - A

**206)** ***Zornia gibbosa*** Span.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Cambodia, China, India, Japan, Mauritius, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Réunion, Sri Lanka, Taiwan, Thailand, Vietnam

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal

FRLH 125566

**Family – Fagaceae (1 genus and 3 species)**

**207)** ***Quercus leucotrichophora*** A.Camus

Habit - Tree; Flowering and Fruiting - May to October

World distribution - Bangladesh, India, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125460

Medical System - AF

**208)** ***Quercus floribunda*** Lindl. ex A.Camus

Habit - Tree; Flowering and Fruiting - May to October

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Kashmir, Uttarakhand

FRLH 125443

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**209)** ***Quercus semecarpifolia*** Sm.

Habit -Tree; Flowering and Fruiting - May to October

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Thailand

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Uttarakhand, West Bengal

FRLH 125295

**Family – Gentianaceae (2 genera and 8 species)**

**210)** ***Gentiana argentea*** (Royle ex D.Don) Royle ex D.Don
Habit - Herb; Flowering and Fruiting - March to June
World distribution - China, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
Medical System - F

**211)** ***Gentiana kurroo*** *Royle*
Habit - Herb; Flowering and Fruiting - September to October
World distribution - Afghanistan, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125544
Medical System - ATU
Note - Endemic to Western Himalaya and Nepal (IUCN Critically Endangered)

**212)** ***Gentiana pedicellata*** *(D.Don) Griseb.*
Habit - Herb; Flowering and Fruiting - March to June
World distribution - China, India, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal
FRLH 125445

**213)** ***Swertia alata*** *(D.Don ex G.Don) Royle ex C.B.Clarke*
Habit - Herb; Flowering and Fruiting - August to October
World distribution - India, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125608
Medical System - A

**214)** ***Swertia cordata*** *(G.Don) Wall. ex C.B.Clarke*

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125347

Medical System - F

**215)** ***Swertia paniculata*** Wall.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Sikkim, Uttarakhand, Tamil Nadu, West Bengal

FRLH 125611

Medical System - A

**216)** ***Swertia purpurascens*** (D.Don) C.B.Clarke

Synonym - *Swertia ciliata* (D.Don) B.L.Burtt

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125349

Medical System - F

**217)** ***Swertia tetragona*** *Edgew.*

Habit - Herb; Flowering and Fruiting - July to October

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125265

Note - Endemic to Himalayas

**Family – Geraniaceae (1 genus and 5 species)**

**218)** ***Geranium lucidum L.***

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Africa (North), Europe and West Asia (India, Iran, Nepal, Pakistan)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125478

Medical System - F

**219)** ***Geranium nepalense*** *Sweet*

Habit - Herb; Flowering and Fruiting - March to July

World native distribution - Afghanistan, China, India, Korea, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatera, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125341

Medical System - FC

**220)** ***Geranium ocellatum*** *Jacquem. ex Cambess.*

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Afghanistan, China, India, Nepal, Pakistan, Saudi Arabia, Thailand, Yemen

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

Note - *Geranium mascatense* Boiss. is sometimes incorrectly used name which represents other species restricted to Arabian Peninsula

**221)** ***Geranium robertianum*** L.

Habit - Herb; Flowering and Fruiting - April to July

World native distribution - Europe, China, India, North America, North Africa, Pakistan, West Asia

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - FC

**222)** ***Geranium wallichianum*** D.Don ex Sweet

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

**Family – Gesneriaceae (1 genus and 1 species)**

**223)** ***Henckelia pumila*** (D.Don) A.Dietr.

Synonym - *Chirita pumila* D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125567

**Family – Hydrangeaceae (3 genera and 3 species)**

**224)** ***Deutzia staminea*** R.Br. ex Wall.

Habit - Shrub; Flowering and Fruiting - April to August

World distribution - China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125454, 125379

Medical System - F

**225)** ***Hydrangea anomala*** *D.Don*

Habit - Climbing shrub; Flowering and Fruiting - June to August

World distribution - China, India, Myanmar, Nepal, Taiwan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand

FRLH 125480

**226)** ***Philadelphus tomentosus*** Wall. ex G.Don

Habit - Tree; Flowering and Fruiting - May to July

World distribution - China, India, Nepal

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125418

**Family – Hypericaceae (1 genus and 5 species)**

**227)** ***Hypericum dyeri*** Rehder
Habit - Shrub; Flowering and Fruiting - June to September
World distribution - India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125351
Note - Endemic to Western Himalaya

**228)** ***Hypericum elodeoides*** Choisy
Habit - Herb; Flowering and Fruiting - July to September
World distribution - China, India, Myanmar, Nepal
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125507
Medical System - FC

**229)** ***Hypericum oblongifolium*** Choisy
Habit - Shrub; Flowering and Fruiting - April to June
World distribution - India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125597
Medical System - F
Note - Endemic to Western Himalaya and Nepal

**230)** ***Hypericum perforatum*** L.
Habit - Herb; Flowering and Fruiting - April to August
World distribution - Palearctic (North Africa, Europe and temperate Asia except NE)
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125531

Medical System – HMC

Note - Rarely present in the lower elevations of Khokhan WLS, much common towards Bajaura.

**231)** ***Hypericum uralum*** Buch.-Ham. ex D.Don

Habit - Shrub; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Thailand

Indian distribution - Assam, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal

FRLH 125642

Medical System - F

**Family – Hypoxidaceae (1 genus and 1 species)**

**232)** ***Hypoxis aurea*** Lour.

Habit - Herb; Flowering and Fruiting - June to August

World distribution - Bangladesh, Cambodia, China India, Japan, Jawa, Korea, Laos, Sunda Is., Malaya, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sumatra, Thailand, Vietnam

Indian distribution - Almost throughout India

Medical System - FC

**Family – Iridaceae (2 genera and 2 species)**

**233)** ***Crocosmia* × *crocosmiiflora*** (Lemoine) N.E.Br.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - South Africa

Indian distribution - Ornamental cultivated plant, found as an escape in orchard

FRLH 125373

**234)** ***Iris tectorum*** Maxim.

Habit - Herb; Flowering and Fruiting - April to May

World native distribution - China

Introduced into - India, Italy, Japan, Korea

Indian distribution - Himachal Pradesh, Sikkim, Uttarakhand

FRLH 125499

Note - Ornamental plant, found as an escape near village

**Family – Juglandaceae (1 genus and 1 species)**

**235)** ***Juglans regia*** L.

Habit - Tree; Flowering and Fruiting - March to October

World native distribution - Afghanistan, Caucasus, India, Iran, Iraq, Lebanon-Syria, Pakistan, Poland, Transcaucasus, Turkey

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand (in wild)

Note - Cultivated in other states

Medical System - AFHTUSC

**Family – Juncaceae (1 genus and 2 species)**

**236)** ***Juncus thomsonii*** Buchenau

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Kyrgyzstan, Myanmar, Nepal, Pakistan, Tajikistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125277

**237)** ***Juncus inflexus*** L.

Habit - Herb; Flowering and Fruiting - May to August

World distribution - Palearctic (North Africa, Europe and temperate Asia except NE)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

Medical System - F

**Family – Lamiaceae (20 genera and 25 species)**

**238)** ***Ajuga parviflora*** Benth.

Habit - Herb; Flowering and Fruiting - March to June

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Haryana, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

**239)** ***Clinopodium vulgare*** L.

Habit - Herb; Flowering and Fruiting - March to June

World distribution - Palearctic (North Africa, Europe and temperate Western Asia including Afghanistan, India and Pakistan)

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125449

Medical System - F

**240)** ***Craniotome furcata*** (Link) Kuntze

Habit - Herb; Flowering and Fruiting - August to September

World distribution - China, India, Laos, Myanmar, Nepal, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand

FRLH 125322

**241)** ***Elsholtzia ciliata*** (Thunb.) Hyl.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Afghanistan, Cambodia, China, India, Japan, Korea, Laos, Malaya, Mongolia, Myanmar, Nepal, Primorye, Russia, Taiwan, Thailand, Vietnam, West Siberia

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125297

Medical System - FC

**242)** ***Elsholtzia fruticosa*** (D.Don) Rehder

Habit - Shrub; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand, West Bengal

Medical System - F

**243)** ***Isodon coetsa*** (Buch.-Ham. ex D.Don) Kudô

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Bangladesh, China, India, Jawa, Laos, Lesser Sunda Is., Myanmar, Nepal, Philippines, Sri Lanka, Sulawesi, Sumatra, Thailand, Vietnam

Indian distribution - Almost throughout India except Western region

FRLH 125282

Medical System - FC

**244)** ***Isodon lophanthoides*** (Buch.-Ham. ex D.Don) H.Hara

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Bangladesh, China, India, Laos, Malaya, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Goa, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125542

Medical System - F

**245)** ***Isodon rugosus*** (Wall. ex Benth.) Codd

Habit - Herb; Flowering and Fruiting - March to October

World distribution - Afghanistan, China, Bangladesh, India, Nepal, Oman, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Rajasthan, Sikkim, Uttarakhand

FRLH 125251

Medical System - F

**246)** ***Lamium album*** L.

Habit - Herb; Flowering and Fruiting - April to August

World native distribution - Europe and entire Temperate Asia including China, India, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125458

Medical System - HS

**247)** ***Leucas lanata*** Benth.

Habit - Herb; Flowering and Fruiting - April to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125526

Medical System - F

**248)** ***Melissa axillaris*** (Benth.) Bakh.f.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Cambodia, China, India, Jawa, Laos, Myanmar, Nepal, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Tripura, Uttarakhand, West Bengal

FRLH 125353

Medical System - FC

**249)** ***Mentha longifolia*** (L.) L.

Habit - Herb; Flowering and Fruiting - May to October

World distribution - Africa, Europe and Temperate Asia except East and NE Asia

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125575

Medical System - A

Note - High Volume Traded species under trade name Jangli Pudina

**250)** ***Micromeria biflora*** (Buch.-Ham. ex D.Don) Benth.

Habit - Herb; Flowering and Fruiting - March to July

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Almost throughout India

FRLH 125591

Medical System - FC

**251)** ***Nepeta ciliaris*** Benth.

Synonym - *Nepeta leucophylla* Benth.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - India, Nepal

Indian distribution - Haryana, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125285

Medical System - F

**252)** ***Nepeta laevigata*** (D.Don) Hand.-Mazz.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125537

**253)** ***Origanum vulgare*** L.

Habit - Herb; Flowering and Fruiting - May to September

World distribution - Palearctic (North Africa, Europe and temperate Asia)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125569

Medical System - AFUC

**254)** ***Perilla frutescens*** (L.) Britton

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Bangladesh, China, India, Japan, Jawa, Korea, Laos, Myanmar, Nepal, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India (also cultivated in many states)

FRLH 125626

**255)** ***Phlomoides bracteosa*** (Royle ex Benth.) Kamelin & Makhm.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - FC

Note - Endemic to Himalayas

**256)** ***Prunella vulgaris*** L.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Entire Northern Hemisphere Temperate region (Northern Africa, Asia, Europe and North America)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Kerala, Nagaland, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125340

Medical System - FC

**257)** ***Roylea cinerea*** (D.Don) Baill.

Habit - Shrub; Flowering and Fruiting - September to October

World distribution - April to September

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125450

Medical System - F

Note - Endemic to lower Western Himalaya and Nepal

**258)** ***Salvia cana*** Wall. ex Benth.

Habit - Herb; Flowering and Fruiting - March to May

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125492

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**259)** ***Salvia nubicola*** Wall. ex Sweet

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125551

Medical System - F

**260)** ***Scutellaria scandens*** D.Don

Habit - Herb; Flowering and Fruiting - March to May

World distribution - India, Nepal

Indian distribution - Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Punjab, Sikkim, Uttarakhand

FRLH 125464

Medical System - F

Note - Endemic to India and Nepal

**261)** ***Stachys melissifolia*** Benth.

Habit - Herb; Synonym - *Stachys splendens* Wall.

Flowering and Fruiting - June to September

World distribution - Afghanistan, Bangladesh, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Nagaland, Sikkim, Uttarakhand

FRLH 125339

Medical System - F

**262)** ***Teucrium royleanum*** Wall. ex Benth.

Habit - Herb; Flowering and Fruiting - April to July

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125486

**Family – Lardizabalaceae (1 genus and 1 species)**

**263)** ***Stauntonia latifolia*** (Wall.) R.Br. ex Wall.

Synonym - *Holboellia latifolia* Wall.

Habit - Climbing shrub; Flowering and Fruiting - April to August

World distribution - Bangladesh, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling)

Medical System - FC

**Family – Lauraceae (3 genera and 3 species)**

**264)** ***Machilus duthiei*** King ex Hook.f.
Synonym - *Persea duthiei* (King ex Hook.f.) Kosterm.
Habit - Tree; Flowering and Fruiting - April to August
World distribution - China, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125446

**265)** ***Neolitsea pallens*** (D.Don) Momiy. & H.Hara
Habit - Tree; Flowering and Fruiting - April to September
World distribution - China, India, Nepal
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125278

**266)** ***Phoebe lanceolata*** (Nees) Nees
Synonym - *Ocotea lanceolata* Nees, *Persea lanceolata* (Nees) Oliv.
Habit - Tree; Flowering and Fruiting - April to September
World distribution - Bangladesh, Cambodia, China, India, Laos, Lesser Sunda Is., Malaya, Myanmar, Nepal, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tripura, Uttarakhand, Uttar Pradesh, West Bengal
FRLH 125263

**Family – Liliaceae (3 genera and 3 species)**

**267)** ***Cardiocrinum giganteum*** (Wall.) Makino
Habit - Herb; Flowering and Fruiting - June to September
World distribution - China, India, Myanmar, Nepal,
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125402

Medical System - FC

**268)** ***Notholirion thomsonianum*** (Royle) Stapf

Habit - Herb; Flowering and Fruiting - April to June

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Sikkim

FRLH 125452

Note - Endemic to Himalayas

**269)** ***Tulipa clusiana*** Redouté

Habit - Herb; Flowering and Fruiting - March to May

World native distribution - Afghanistan, India, Iran, Iraq, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125455

Medical System - F

**Family – Linaceae (1 genus and 1 species)**

**270)** ***Reinwardtia indica*** Dumort.

Habit - Herb; Flowering and Fruiting - March to June

World distribution - Bangladesh, China, India, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Almost throughout India

FRLH 125359

Medical System - F

**Family – Linderniaceae (1 genus and 1 species)**

**271)** ***Torenia crustacea*** (L.) Cham. & Schltdl.

Synonym - *Lindernia crustacea* (L.) F.Muell.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Pantropical (Africa, Asia and Latin America)

Indian distribution - Throughout India

FRLH 125332

Medical System - VC

**Family – Loranthaceae (1 genus and 1 species)**

**272)** ***Taxillus vestitus*** (Wall.) Danser

Synonym - *Scurrula vestita* (Wall.) G.Don

Habit - Parasitic shrub; Flowering - August to September

World distribution - China, India, Myanmar, Nepal, Vietnam

Indian distribution - Assam, Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Jammu & Kashmir, Uttarakhand

FRLH 125304

**Family – Lythraceae (1 genus and 1 species)**

**273)** ***Punica granatum*** L.

Habit - Shrub; Flowering and Fruiting - April to September

World native distribution - Afghanistan, India, Iran, Iraq, North Caucasus, Pakistan, Tajikistan, Transcaucasus, Turkey

Indian distribution - Wild population in Himachal Pradesh, Jammu & Kashmir & Uttarakhand. Found in cultivated in other states of India

Medical System - AFHTUSC

Note - High Volume Traded species under trade name Dadam, Dadima

(local name - Daadu)

**Family – Malvaceae (6 genera and 6 species)**

**274)** ***Abelmoschus manihot*** **var.** ***pungens*** (Roxb.) Hochr.

Habit - Herb; Flowering and Fruiting - August to October

World native distribution - China, India, Laos, Lesser Sunda Is., Myanmar, Nepal, Pakistan, Philippines, Sumatra, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Nagaland, Sikkim, Tripura, Uttarakhand, West Bengal

FRLH 125535

Medical System - FC

**275)** ***Grewia optiva*** J.R.Drumm. ex Burret

Habit - Tree; Flowering and Fruiting - May to October

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttarakhand

Medical System - A

Note - Endemic to lower/foothill Himalayan region

**276)** ***Malva verticillata*** L.

Habit - Herb; Flowering and Fruiting - April to September

World native distribution - Temperate Asia and North East Africa

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125306

Medical System - FC

**277)** ***Modiola caroliniana*** (L.) G.Don

Habit - Herb; Flowering and Fruiting - April to July

World native distribution - South America

Introduced into - Asia (India, Japan, Korea), Morocco, North America, South Africa, West Europe, Tasmania

Indian distribution - Himachal Pradesh, Tamil Nadu, Uttarakhand

Note - Naturalised invasive species

**278)** ***Sida rhombifolia*** L.

Habit - Herb; Flowering and Fruiting - August to October

World native distribution - Africa and Asia (China, India, Japan, Pakistan & SE Asia)

Indian distribution - Almost throughout India

FRLH 125592

Medical System - F

**279)** ***Triumfetta pentandra*** A.Rich.

Habit - Herb; Flowering and Fruiting - August to October
World native distribution - Africa, India, Oman, Pakistan, Sri Lanka, Yemen
Indian distribution - Almost throughout India except N.E. region
FRLH 125312

**Family – Mazaceae (1 genus and 2 species)**

**280)** ***Mazus pumilus*** (Burm.f.) Steenis
Habit - Herb; Flowering and Fruiting - June to September
World distribution - Afghanistan, Bangladesh, Cambodia, China, India, Japan, Jawa, Korea, Laos, Lesser Sunda Is., Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Tadzhikistan, Taiwan, Thailand, Vietnam
Indian distribution - Almost throughout India except Western India
FRLH 125269

**281)** ***Mazus surculosus*** D.Don
Habit - Herb; Flowering and Fruiting - June to September
World distribution - China, India, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Sikkim, Uttarakhand, West Bengal

**Family – Melanthiaceae (1 genus and 1 species)**

**282)** ***Paris polyphylla*** Sm.
Habit - Herb; Flowering and Fruiting - May to September
World distribution - Bangladesh, China, India, Myanmar, Nepal
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)
FRLH 125485
Medical System – AC
Note - IUCN Vulnerable (A4cd) 2020

**Family – Meliaceae (2 genera and 2 species)**

**283)** ***Melia azedarach*** L.

Habit - Tree; Flowering and Fruiting - April to November

World native distribution - Australia, Bangladesh, Cambodia, China, India, Jawa, Laos, Lesser Sunda Is., Nepal, New Guinea, Philippines, Sri Lanka, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125495

Medical System - AFTUSC

**284)** ***Toona sinensis*** (Juss.) M.Roem.

Habit - Tree; Flowering and Fruiting - May to October

World native distribution - Borneo, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatera, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Manipur, Sikkim, Uttarakhand

FRLH 125413

**Family – Moraceae (2 genera and 4 species)**

**285)** ***Ficus hederacea*** Roxb.

Habit - Climbing shrub; Flowering and Fruiting - June to November

World distribution - Bangladesh, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Andaman Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jharkhand, Madhya Pradesh, Meghalaya, Odisha, Sikkim, Tripura, Uttarakhand, West Bengal

FRLH 125581

**286)** ***Ficus palmata*** **subsp. virgata** Browicz

Habit - Tree; Flowering and Fruiting - March to August

World distribution - Afghanistan, India, Iran, Nepal, Pakistan, Palestine, Saudi Arabia, Sinai

Indian distribution - Andhra Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Western Himalaya, Odisha, Rajasthan and Uttar Pradesh
FRLH 125596
Medical System - FS

**287)** ***Ficus neriifolia*** Sm.
Habit - Tree; Flowering and Fruiting - July to November
World distribution - China, India, Myanmar, Nepal, Thailand
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)
FRLH 125574

**288)** ***Morus serrata*** Roxb.
Habit - Tree; Flowering and Fruiting - March to May
World distribution - China, India, Nepal, Pakistan
Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125361
Medical System - F

**Family – Nyctaginaceae (1 genus and 1 species)**

**289)** ***Mirabilis himalaica*** (Edgew.) Heimerl
Habit - Herb; Flowering and Fruiting - July to September
World distribution - China, India, Nepal
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125533
Medical System - AC

**Family – Oleaceae (4 genera and 4 species)**

**290)** ***Chrysojasminum humile*** (L.) Banfi
Habit - Shrub; Flowering and Fruiting - April to October
World distribution - China, India, Nepal

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand
FRLH 125431
Medical System - AFTSH

**291)** ***Jasminum officinale*** L.
Habit - Shrub; Flowering and Fruiting - June to October
World distribution - Afghanistan, Bangladesh, China, Iran, Nepal, Pakistan, Tadzhikistan, Transcaucasus, Turkey
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Rajasthan, Uttarakhand
Medical System - AFHU
Note - High Volume Traded species under trade name Ban chameli, Ja

**292)** ***Ligustrum compactum*** (Wall. ex G.Don) Hook.f. & Thomson ex Brandis
Habit - Tree; Flowering and Fruiting - June to September
World distribution - China, India, Nepal
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Sikkim, Uttarakhand
FRLH 125266

**293)** ***Olea europaea*** **subsp. cuspidata** (Wall. & G.Don) Cif.
Habit - Tree; Flowering and Fruiting - April to September
World native distribution - Afghanistan, Africa, China, India, Nepal, Saudi Arabia, Oman, Pakistan Yemen
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Maharashtra Uttarakhand
Medical System - F

**Family – Onagraceae (3 genera and 4 species)**

**294)** ***Circaea alpina*** **subsp. imaicola** (Asch. & Magnus) Kitam.
Habit - Herb; Flowering and Fruiting - July to September
World distribution - Afghanistan, Bangladesh, China, India, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Tamil Nadu , Uttarakhand

Medical System - F

**295)** ***Epilobium royleanum*** Hausskn.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125559

Medical System - F

**296)** ***Oenothera rosea*** L'Hér. ex Aiton

Habit - Herb; Flowering and Fruiting - April to September

World native distribution - North America and South America

Introduced into - Asia (India, Pakistan, China, Japan, Myanmar), Europe, Africa and Australia

Indian distribution - Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Sikkim, Tamil Nadu, Uttarakhand

FRLH 125425

Note - Naturalised invasive species

**297)** ***Oenothera biennis*** L.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - North America

Introduced into - Asia, Europe, Africa and South America

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Tamil Nadu, Uttarakhand

Medical System - FHM

Note - Naturalised exotic species. Only seen at few localities near Chesta village.

**Family – Orchidaceae (11 genera and 15 species)**

**298)** ***Calanthe davidii*** Franch.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Japan, Nepal, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Uttarakhand

Endangered in India IUCN (C2a (i, ii); D) 2019

FRLH 125363

**299)** ***Calanthe puberula*** Lindl.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, China, India, Japan, Korea, Myanmar, Nepal, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125376

**300)** ***Calanthe tricarinata*** Lindl.

Habit - Herb; Flowering and Fruiting - May to September

World distribution - China, Japan, Korea, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Manipur, Nagaland, Sikkim, Uttarakhand, West Bengal

FRLH 125371

Medical System - F

**301)** ***Crepidium acuminatum*** (D.Don) Szlach.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, Cambodia, China, India, Jawa, Laos, Myanmar, Nepal, Philippines, Sumatra, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125629

Medical System - AF

**302)** ***Cymbidium macrorhizon*** Lindl.

Habit - Herb; Fruiting - September (only seen during fruiting)

World distribution - Cambodia, China, India, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Chhattisgarh, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

Very rare, only two plants were seen in fruiting stage in Pine forest

**303)** ***Cyrtosia falconeri*** (Hook.f.) Aver.

Synonym - *Galeola falconeri* Hook.f.

Habit - Herb; Flowering and Fruiting - September to October

World distribution - China, India, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, **Himachal Pradesh,** Manipur, Meghalaya, Mizoram, Nagaland, Sikkim,

Uttarakhand, West Bengal

FRLH 125512

**304)** ***Epipactis helleborine*** (L.) Crantz

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Palearctic (North Africa, Europe and temperate Asia)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125375

Medical System - F

**305)** ***Gastrodia falconeri*** D.L.Jones & M.A.Clem.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Nepal, Pakistan

Indian distribution - Jammu and Kashmir, Himachal Pradesh, Uttarakhand

FRLH 125440

Note - Endemic to Western Himalaya

**306)** ***Habenaria intermedia*** D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal (Darjeeling)
Medical System - F

**307)** ***Herminium edgeworthii*** (Hook.f. ex Collett) X.H.Jin, Schuit., Raskoti & Lu Q.Huang
Synonyms - *Platanthera edgeworthii* (Hook.f. ex Collett) X.H.Jin, Schuit.,
*Habenaria edgeworthii* Hook.f. ex Collett
Habit - Herb; Flowering and Fruiting - July to September
World distribution - China, India, Myanmar, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Sikkim, Uttarakhand, West Bengal (Darjeeling)
FRLH 125301
Medical System - A

**308)** ***Herminium lanceum*** (Thunb. ex Sw.) Vuijk
Habit - Herb; Flowering and Fruiting - July to September
World distribution - China, India, Japan, Jawa, Korea, Lesser Sunda Is., Malaya, Mongolia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sulawesi, Taiwan, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand, W. Bengal (Darjeeling)
FRLH 125504
Medical System - F

**309)** ***Neottia microglottis*** (Duthie) Schltr.
Habit - Herb; Flowering and Fruiting - August to September
World distribution - India
Indian distribution - **Himachal Pradesh** and Uttarakhand
FRLH 125439
Note - Very rare mycoheterotrophic orchid endemic to Western Himalaya.
Rediscovery after four decades and a new addition to state flora of Himachal Pradesh

**310)** ***Neottia listeroides*** Lindl.

Habit - Herb; Flowering and Fruiting - August to September

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu and Kashmir, Nagaland, Sikkim, Uttarakhand

FRLH 125372

**311)** ***Satyrium nepalense*** D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Manipur, Meghalaya, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125291

Medical System - FC

**312)** ***Spiranthes australis*** (R.Br.) Lindl.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Almost entire Asia and Australia

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Sikkim, Tripura, Uttar Pradesh, Uttarakhand, W. Bengal

FRLH 125367

Medical System - F

**Family – Orobanchaceae (4 genera and 4 species)**

**313)** ***Leptorhabdos parviflora*** (Benth.) Benth.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, India, Iran, Kyrgyzstan, Nepal, North Caucasus, Oman, Pakistan, Tajikistan, Transcaucasus, Turkmenistan, Uzbekistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125598

**314)** ***Lindenbergia indica*** (L.) Vatke

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa (West), Bangladesh, Gulf States, India, Iran, Nepal, Oman, Pakistan, Saudi Arabia, Yemen

Indian distribution - Throughout India

FRLH 125560

Medical System - F

**315)** ***Pedicularis bifida*** (Buch.-Ham. ex D.Don) Pennell

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Nepal, Tibet

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttarakhand

FRLH 125502

Note - Endemic to Himalayas

**316)** ***Sopubia trifida*** Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - September to October

World distribution - Bangladesh, China, India, Jawa, Laos, Lesser Sunda Is., Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125615

**Family – Oxalidaceae (1 genus and 2 species)**

**317)** ***Oxalis corniculata*** L.

Habit - Herb; Flowering and Fruiting - March to September

World distribution - Central and South America

Introduced into - Africa, Asia, Australia, Europe and North America

Indian distribution - Almost throughout India

Medical System - AFUSC

Note - Naturalised invasive species

**318)** ***Oxalis latifolia*** Kunth

Habit - Herb; Flowering and Fruiting - April to September

World distribution - North and South America

Introduced into - Africa, Asia, Australia (Tasmania)

Indian distribution - Andhra Pradesh, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Meghalaya, Punjab, Tamil Nadu, Uttar Pradesh, Sikkim

Medical System - A

Note - Naturalised invasive species

**Family – Papaveraceae (2 genera and 2 species)**

**319)** ***Corydalis cornuta*** Royle

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

**320)** ***Fumaria indica*** (Hausskn.) Pugsley

Synonym - *Fumaria parviflora* var. *indica* (Hausskn.) Parsa

Habit - Herb; Flowering and Fruiting - March to April

World native distribution - Afghanistan, India, Iran, Lebanon-Syria, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Bihar, Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, West Bengal

Medical System - A

Note - High Volume Traded species under trade name Shahtara, Parpata, Pitpapda

**Family – Phrymaceae (1 genus and 1 species)**

**321)** ***Phryma nana*** Koidz.

Synonym - *Phryma leptostachya* var. *nana* (Koidz.) H.Hara

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Mongolia, Japan, Korea, Mongolia, Nepal, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand

FRLH 125510

**Family – Phyllanthaceae (2 genera and 2 species)**

**322)** ***Glochidion heyneanum*** (Wight & Arn.) Wight

Habit - Tree; Flowering and Fruiting - July to October

World distribution - Bangladesh, Cambodia, China, India, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Throughout India (except Andaman & Nicobar Islands)

FRLH 125639

Medical System - F

**323)** ***Leptopus cordifolius*** Decne.

Habit - Shrub; Flowering and Fruiting - April to October

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125424

**Family – Phytolaccaceae (1 genus and 1 species)**

**324)** ***Phytolacca acinosa*** Roxb.

Habit - Herb; Flowering and Fruiting - May to September

World native distribution - China, India, Japan, Korea, Myanmar, Nepal, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu, Sikkim, Manipur, Meghalaya, Uttarakhand

FRLH 125409

Medical System - HMCF

**Family – Piperaceae (1 genus and 1 species)**

**325)** ***Peperomia tetraphylla*** (G.Forst.) Hook. & Arn.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Pan tropical (Africa, America, Asia, Australia)

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Tripura, Uttarakhand, West Bengal

FRLH 125580

Medical System - F

**Family – Plantaginaceae (4 genera and 4 species)**

**326)** ***Misopates orontium*** (L.) Raf.

Habit - Herb; Flowering and Fruiting - March to May

World native distribution - Africa, South Europe and Western Asia (India, Iran, Pakistan)

Indian distribution - Bihar, Delhi, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh

FRLH 125262

**327)** ***Nanorrhinum ramosissimum*** (Wall.) Betsche

Habit - Herb; Flowering and Fruiting - August to September

World distribution - Bangladesh, India, Iran, Kenya, Myanmar, Nepal, Oman, Pakistan, Somalia, Sri Lanka, Sudan, Tajikistan

Indian distribution - Andhra Pradesh, Bihar, Daman & Diu, Delhi, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal

FRLH 125552

**328)** ***Plantago asiatica*** L.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Bangladesh, Cambodia, China, India, Inner Mongolia, Japan, Jawa, Korea, Laos, Lesser Sunda Is., Malaya, Myanmar, Nepal, Sri Lanka, Taiwan, Thailand, Tibet, Vietnam

Indian distribution - Almost throughout India

FRLH 125622

Medical System - FC

**329)** ***Wulfeniopsis amherstiana*** (Benth.) D.Y.Hong

Synonym - *Wulfenia amherstiana* Benth.

Habit - Herb; Flowering and Fruiting - July to August

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Jammu & Kashmir, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand

FRLH 125553

Note - Endemic to Himalayas

**Family – Poaceae (21 genera and 22 species)**

**330)** ***Achnatherum sibiricum*** (L.) Keng ex Tzvelev

Synonym - *Stipa sibirica* (L.) Lam.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Temperate Asia

Indian distribution - Himachal Pradesh, Jammu and Kashmir, Uttarakhand

**331)** ***Apluda mutica*** L.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, India, Oman, Pakistan, South East Asia, Sri Lanka, Uzbekistan

Indian distribution - Almost throughout India

FRLH 125288

**332)** ***Arthraxon hispidus*** (Thunb.) Makino

Habit - Herb; Flowering and Fruiting - June to October

World native distribution - Africa, Asia (most countries) and Australia

Indian distribution - Almost throughout India

FRLH 125525

**333)** ***Bromus japonicus*** Houtt.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Palearctic (North Africa, Europe and most of temperate Asia)

Indian distribution - Himachal Pradesh, Jammu and Kashmir, Uttarakhand, West Bengal

Medical System - SR

**334)** ***Cenchrus orientalis*** (Rich.) Morrone

Synonym - *Pennisetum orientale* Rich

Habit - Herb; Flowering and Fruiting - April to October

World distribution - Afghanistan, Algeria, Bangladesh, Egypt, Gulf States, India, Iran, Iraq, Lebanon-Syria, Morocco, Myanmar, Nepal, Oman, Pakistan, Palestine, Saudi Arabia, Sri Lanka, Tajikistan, Transcaucasus, Turkey, Turkmenistan

Indian distribution - Almost throughout India

FRLH 125287

**335)** ***Chrysopogon gryllus*** (L.) Trin.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - Afghanistan, China, Europe, Gulf States, India, Iran, Iraq, Lebanon-Syria, Nepal, Pakistan, Thailand, Transcaucasus, Turkey

Indian distribution - Assam, Chhattisgarh, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Meghalaya, Rajasthan, Sikkim, Uttarakhand

FRLH 125620

**336)** ***Cymbopogon distans*** (Nees ex Steud.) W.Watson

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Uttarakhand, West Bengal

FRLH 125331

Medical System - F

**337)** ***Cynodon dactylon*** (L.) Pers.

Habit - Herb; Flowering and Fruiting - April to July

World native distribution - Africa, Asia (except Northern part), Australia and Europe

Indian distribution - Almost throughout India

Medical System - AFHVTUSC

Note - High Volume Traded species under trade name Doob, Durva

**338)** ***Drepanostachyum falcatum*** (Nees) Keng f.

Synonym - *Arundinaria falcata* Nees, *Thamnocalamus falcatus* D.C.McClint.

Habit - Shrub; Flowering- Plietesials monocarpic plant, rarely flowers in 20-58 years

World distribution - Cambodia, India, Laos, Nepal, Vietnam

Indian distribution - Himachal Pradesh, Mizoram, Uttarakhand, Sikkim

**339)** ***Eleusine indica*** (L.) Gaertn.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Paleotropical (Africa and Asia)

Indian distribution - Almost throughout India

Medical System - ASC

**340)** ***Koeleria macrantha*** (Ledeb.) Schult.

Habit - Herb; Flowering and Fruiting - May to July

World distribution - Temperate regions of Asia, Europe and North America (widespread)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Sikkim, Uttarakhand

**341)** ***Microstegium falconeri*** (Hook.f.) Clayton

Synonym - *Pogonatherum falconeri* (Hook.f.) Roberty

Habit - Herb; Flowering and Fruiting - August to September

World native distribution - India and Bhutan

Indian distribution - Himachal Pradesh and Uttarakhand

Note - Endemic to Western Himalaya and Bhutan

**342)** ***Miscanthus nepalensis*** (Trin.) Hack.

Habit - Herb; Flowering and Fruiting - August to October
World native distribution - China, India, Malaya, Myanmar, Nepal, Pakistan, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Delhi, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal (Darjeeling)
FRLH 125267

**343)** ***Oplismenus undulatifolius*** (Ard.) P.Beauv.
Habit - Herb; Flowering and Fruiting - June to September
World native distribution - Africa, Asia, Australia, Europe
Indian distribution - Jammu & Kashmir, Himachal Pradesh, Kerala, Meghalaya, Odisha, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Darjeeling)
FRLH 125541
Medical System - F

**344)** ***Paspalum dilatatum*** Poir.
Habit - Herb; Flowering and Fruiting - July to October
World native distribution - South America
Introduced into - Africa, Asia, Australia, Europe and North America
Indian distribution - Andaman & Nicobar Islands, Assam, Himachal Pradesh, Kerala, Maharashtra, Meghalaya, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal
Introduced invasive species
FRLH 125647

**345)** ***Paspalum distichum*** L.
Habit - Herb; Flowering and Fruiting - June to September
World native distribution - South America
Introduced into - Africa, Asia, Australia, Europe and North America
Indian distribution - Almost throughout India
Introduced invasive species
FRLH 125583
Medical System - V

**346)** ***Phacelurus speciosus*** (Steud.) C.E.Hubb.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Afghanistan, Pakistan, Nepal

Indian distribution - Himachal Pradesh, Uttarakhand

FRLH 125362

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**347)** ***Tripidium rufipilum*** (Steud.) Welker, Voronts. & E.A.Kellogg

Synonym - *Saccharum rufipilum* Steud.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Bangladesh, China, India, Myanmar, Nepal, Pakistan, Vietnam

Indian distribution - Assam, Bihar, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand, Uttar Pradesh, West Bengal

FRLH 125558

**348)** ***Setaria pumila*** (Poir.) Roem. & Schult.

Habit - Herb; Flowering and Fruiting - June to October

World distribution - Africa, Asia and Europe (widespread)

Indian distribution - Almost throughout India

FRLH 125327

**349)** ***Themeda anathera*** (Nees ex Steud.) Hack.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttar Pradesh, Uttarakhand

FRLH 125571

**350)** ***Triticum aestivum*** L.

Habit - Herb; Flowering and Fruiting - February to May

World native distribution - India, Iran, Lebanon-Syria, Pakistan, Transcaucasus, Turkey

Indian distribution - Almost throughout India (Cultivated species)

Medical System - AFUSMC

**351)** ***Zea mays*** L.

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - Guatemala and Mexico

Introduced into - Africa, America, Asia, Australia and Europe

Indian distribution - Almost throughout India

Cultivated food species

Medical System - AFHUSMC

**Family – Polygalaceae (1 genus and 3 species)**

**352)** ***Polygala abyssinica*** R.Br. ex Fresen.

Habit - Herb; Flowering and Fruiting - March to September

World distribution - Afghanistan, Africa (Western), India, Nepal, Oman, Pakistan, Saudi Arabia, Yemen

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Punjab, Rajasthan, Uttarakhand

FRLH 125474

Medical System - F

**353)** ***Polygala crotalarioides*** Buch.-Ham. ex DC.

Habit - Herb; Flowering and Fruiting - July to October

World distribution - Bangladesh, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Manipur, Meghalaya, Odisha, Tripura, Uttarakhand

FRLH 125606

Medical System - FC

**354)** ***Polygala tatarinowii*** Regel

Habit - Herb; Flowering and Fruiting - August to October

World distribution - China, Japan, Korea, Mongolia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Punjab, Sikkim, Uttarakhand
FRLH 125604

**Family – Polygonaceae (6 genera and 11 species)**

**355)** ***Bistorta amplexicaulis*** (D.Don) Greene
Habit - Herb; Flowering and Fruiting - July to September
World native distribution - Afghanistan, China, India, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125357
Medical System - F

**356)** ***Persicaria capitata*** (Buch.-Ham. ex D.Don) H.Gross
Habit - Herb; Flowering and Fruiting - April to September
World distribution - China, India, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125536

**357)** ***Persicaria hydropiper*** (L.) Delarbre
Habit - Herb; Flowering and Fruiting - April to September
World native distribution - Asia, Australia, North Africa and Europe (widespread)
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal
FRLH 125369
Medical System - HFC

**358)** ***Persicaria nepalensis*** (Meisn.) H.Gross
Habit - Herb; Flowering and Fruiting - June to September
World distribution - Afghanistan, Africa, China, India, Japan, Korea, Pakistan, South East Asia, Sri Lanka, Taiwan, Yemen

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125582

**359)** ***Persicaria chinensis*** (L.) H.Gross

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Bangladesh, Cambodia, China, India, Japan, Jawa, Korea, Laos, Malaya, Myanmar, Nepal, Philippines, Sri Lanka, Sumatra, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand

**360)** ***Polygonum aviculare*** L.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Temperate Asia, Africa, Europe and North America

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125281

Medical System - AUC

**361)** ***Polygonum recumbens*** Royle ex Bab.

Habit - Herb; Flowering and Fruiting - August to October

World distribution - India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125290

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**362)** ***Fagopyrum cymosum*** (Trevir.) Meisn.

Synonym - *Fagopyrum dibotrys* (D. Don) Hara

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - China, India, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim

FRLH 125609

Medical System - FC

**363)** ***Fallopia pterocarpa*** (Wall. ex Meisn.) Holub

Habit - Climbing herb; Flowering and Fruiting - August to October

World distribution - India, Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125601

Note - Endemic to Himalayas

**364)** ***Rumex hastatus*** D.Don

Habit - Herb; Flowering and Fruiting - April to August

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125530

Medical System - F

**365)** ***Rumex nepalensis*** Spreng.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Afghanistan, Africa, China, India, Iran, Italy, Japan, Lebanon - Syria, Madagascar, Myanmar, Nepal, Pakistan, Saudi Arabia, Sri Lanka, Tajikistan, Turkey, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125397

Medical System - FC

**Family – Portulacaceae (1 genus and 1 species)**

**366)** ***Portulaca oleracea*** L.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Africa and Western Asia ( upto Afghanistan & Pakistan)

Indian distribution - Almost throughout India

Medical System - AFVUSC

Note - Introduced and naturalised in India as per POWO.

**Family – Primulaceae (3 genera and 8 species)**

**367)** ***Androsace lanuginosa*** Wall.

Habit - Herb; Flowering and Fruiting - June to August

World distribution - India and Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125255

Note - Endemic to Himalayas

**368)** ***Androsace rotundifolia*** Hardw.

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125411

Medical System - F

**369)** ***Androsace sarmentosa*** Wall.

Habit - Herb; Flowering and Fruiting - June to August

World distribution - China, India, Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125387

**370)** ***Lysimachia arvensis*** **var.** ***caerulea*** (L.) Turland & Bergmeier

Habit - Herb; Flowering and Fruiting - March to May

World distribution - Africa (North), West Asia (Afghanistan, India, Nepal, Pakistan), Europe

Indian distribution - Almost throughout India

FRLH 125254

Medical System - HUC

**371)** ***Lysimachia chenopodioides*** Watt ex Hook.f.

Habit - Herb; Flowering and Fruiting - June to August

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

**372)** ***Lysimachia debilis*** Wall.

Habit - Herb; Flowering and Fruiting - June to August

World distribution - China, India, Myanmar, Nepal, Pakistan, Sumatra, Thailand

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125410

**373)** ***Lysimachia lobelioides*** Wall.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - China, India, Laos, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

**374)** ***Myrsine africana*** L.

Habit - Shrub; Flowering and Fruiting - February to June

World distribution - Afghanistan, Africa, China, India, Nepal, Pakistan, Saudi Arabia, Taiwan, Yemen

Indian distribution - Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttarakhand, Uttar Pradesh

FRLH 125335

Medical System - AUC

**Family – Ranunculaceae (7 genera and 11 species)**

**375)** ***Aconitum sp.***

Habit - Herb; Flowering and Fruiting - August (only seen during fruit dehiscence)

Note - Found on way to Munjhag peak from Nursery Khokhan WLS

**376)** ***Aquilegia pubiflora*** Wall. ex Royle

Habit - Herb; Flowering and Fruiting - June to August
World distribution - Afghanistan, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
Medical System - F

**377)** ***Clematis grata*** Wall.
Habit - Climbing herb; Flowering and Fruiting - September to November
World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Taiwan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125314
Medical System - F

**378)** ***Clematis buchananiana*** DC.
Habit - Climbing herb; Flowering and Fruiting - September to November
World distribution - China, India, Myanmar, Nepal, Pakistan, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand, West Bengal
FRLH 125589
Medical System - F

**379)** ***Delphinium denudatum*** Wall. ex Hook.f. & Thomson
Habit - Herb; Flowering and Fruiting - March to May
World distribution - Afghanistan, India, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125491
Medical System - AU
Note - Endemic to Western Himalaya

**380)** ***Eriocapitella rivularis*** (Buch.-Ham. ex DC.) Christenh. & Byng
Synonym - *Anemone rivularis* Buch.-Ham. ex DC.
Habit - Herb; Flowering and Fruiting - July to August
World distribution - China, India, Laos, Myanmar, Nepal, Sumatra, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim,
Tamil Nadu, Uttarakhand
FRLH 125268
Medical System - FC

**381)** ***Eriocapitella vitifolia*** (Buch.-Ham. ex DC.) Nakai
Synonym - *Anemone vitifolia* Buch.-Ham. ex DC.
Habit - Herb; Flowering and Fruiting - June to August
World distribution - China, India, Myanmar, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal
FRLH 125368
Medical System - FC

**382)** ***Ranunculus diffusus*** DC.
Habit - Herb; Flowering and Fruiting - May to August
World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal
FRLH 125315

**383)** ***Ranunculus distans*** D.Don
Habit - Herb; Flowering and Fruiting - April to August
World distribution - Afghanistan, China, India, Kazakhstan, Kyrgyzstan, Nepal, Pakistan, Tajikistan, Uzbekistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Odisha, Sikkim, Uttarakhand
FRLH 125400
Medical System - F

**384)** ***Thalictrum foliolosum*** DC.
Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Pakistan, Thailand, Vietnam
Indian distribution - Andhra Pradesh, Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Odisha, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal
FRLH 125579
Medical System - ASFC

**385)** ***Thalictrum saniculiforme*** DC.
Habit - Herb; Flowering and Fruiting - July to September
World distribution - China, India, Nepal
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Sikkim, Tamil Nadu, Uttarakhand, West Bengal
FRLH 125565

**Family – Rhamnaceae (3 genera and 5 species)**

**386)** ***Rhamnus procumbens*** Edgew.
Habit - Shrub; Flowering and Fruiting - May to August
World distribution - India, Myanmar, Nepal
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125487

**387)** ***Rhamnus triquetra*** (Wall.) Brandis
Habit - Tree; Flowering and Fruiting - July to October
World distribution - India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Maharashtra, Punjab, Uttar Pradesh, Uttarakhand
FRLH 125593
Medical System - F

**388)** ***Rhamnus virgata*** Roxb.
Habit - Shrub; Flowering and Fruiting - April to July
World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan, Thailand
Indian distribution - Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Jammu &

Kashmir, Kerala, Odisha, Sikkim, Uttarakhand
FRLH 125423
Medical System - F

**389)** ***Sageretia thea*** (Osbeck) M.C.Johnst.
Habit - Shrub; Flowering and Fruiting - June to October
World distribution - Afghanistan, China, Ethiopia, Gulf States, India, Iran, Japan, Korea, Malaya, Myanmar, Nepal, Oman, Pakistan, Saudi Arabia, Somalia, Tajikistan, Taiwan, Thailand, Turkmenistan, Uzbekistan, Vietnam, Yemen
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125523

**390)** ***Ziziphus oxyphylla*** Edgew.
Habit - Shrub; Flowering and Fruiting - May to October
World distribution - Afghanistan, India, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand
FRLH 125527
Medical System - F
Note - Endemic to Western Himalaya and Nepal

**Family - Rosaceae (15 genera and 27 species)**

**391)** ***Agrimonia pilosa*** Ledeb.
Habit - Herb; Flowering and Fruiting - March to July
World distribution - Temperate Asia and Eastern Europe
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand
FRLH 125430
Medical System - FC

**392)** ***Argentina lineata*** (Trevir.) Soják
Synonym - *Potentilla lineata* Trevir.
Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Laos, Myanmar, Nepal, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal

FRLH 125384

Medical System - F

**393)** ***Cotoneaster affinis*** Lindl.

Habit - Shrub; Flowering and Fruiting - May to September

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125394

**394)** ***Cotoneaster microphyllus*** Lindl.

Habit - Shrub; Flowering and Fruiting - May to September

World native distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

**395)** ***Fragaria nubicola*** (Lindl. ex Hook.f.) Lacaita

Habit - Herb; Flowering and Fruiting - May to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

**396)** ***Geum roylei*** Wall.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

Note - Endemic to Himalayas

**397)** ***Malus domestica*** (Suckow) Borkh.

Habit - Tree; Flowering and Fruiting - April to August

World native distribution - Afghanistan, Kazakhstan, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan

Introduced into - Temperate region of America, Asia (India, Nepal), Australia & Europe

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand (Cultivated)

Medical System - ATUSC

**398)** ***Potentilla atrosanguinea*** G.Lodd.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

**399)** ***Potentilla indica*** (Andrews) Th.Wolf

Habit - Herb; Flowering and Fruiting - April to August

World distribution - Afghanistan, China, India, Japan, Jawa, Korea, Laos, Lesser Sunda Is., Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam

Indian distribution - Almost throughout India

Medical System - FC

**400)** ***Potentilla nepalensis*** Hook.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125270

Medical System - A

Note - Endemic to Himalayas

**401)** ***Prinsepia utilis*** Royle

Habit - Shrub; Flowering and Fruiting - March to August

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand

FRLH 125587

Medical System - FC

**402)** ***Prunus armeniaca*** L.

Habit - Tree; Flowering and Fruiting - March to July

World native distribution - China, India, Kazakhstan, Kyrgyzstan, Mongolia, Uzbekistan

Introduced into - Africa (Northern), Asia, Australia and Europe

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Manipur, Sikkim, Uttarakhand

Medical System - F

Note - Cultivated fruit species

High Volume Traded species under trade name Chuli

**403)** ***Prunus cerasoides*** Buch.-Ham. ex D.Don

Habit - Tree; Flowering and Fruiting - November to June

World distribution - India, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Sikkim, Tamil Nadu (cultivated), Uttar Pradesh, West Bengal

Medical System - F

Note - High Volume Traded species under trade name Padamkasht, Padmaka

**404)** ***Prunus cornuta*** (Wall. ex Royle) Steud.

Habit - Tree; Flowering and Fruiting - April to August

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Assam, Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

Medical System - F

Note - Wild edible fruit species locally called as Jaamu

**405)** ***Prunus persica*** (L.) Batsch

Habit - Tree; Flowering and Fruiting - March to August
World native distribution - China North-Central
Introduced into - Temperate region of Africa, Asia, America, Australia & Europe
Indian distribution - All Himalayan states (Cultivated species)
Medical System - AHTUC
Note - Cultivated fruit species

**406)** ***Pyrus communis*** L.
Habit - Tree; Flowering and Fruiting - March to July
World native distribution - Europe and Western Asia
Introduced into - Temperate region of Africa, Asia, America and Australia as a fruit
Indian distribution - All Himalayan states (Cultivated species)
FRLH 125286
Medical System - AUS

**407)** ***Pyrus pashia*** Buch.-Ham. ex D.Don
Habit - Tree; Flowering and Fruiting - March to October
World native distribution - Afghanistan, China, India, Iran, Laos, Myanmar, Nepal, Pakistan, Thailand, Vietnam
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
Medical System - FC
Note - Wild edible fruit species

**408)** ***Rosa brunonii*** Lindl.
Synonym - *Rosa moschata* var. *brunonii* (Lindl.) Cardot
Habit - Climbing shrub; Flowering and Fruiting - March to September
World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttarakhand
FRLH 125528
Medical System - AFS

**409)** ***Rosa macrophylla*** Lindl.

Habit - Climbing shrub; Flowering and Fruiting - May to September
World distribution - Afghanistan, China, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
Medical System - FC

**410)** ***Rubus ellipticus*** Sm.
Habit - Climbing shrub; Flowering and Fruiting - March to May
World native distribution - China, India, Laos, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam
Indian distribution - Almost throughout India
Medical System - FC

**411)** ***Rubus macilentus*** Cambess.
Habit - Climbing shrub; Flowering and Fruiting - April to June
World distribution - China, India, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Jammu & Kashmir, Himachal Pradesh, Sikkim, Uttarakhand
FRLH 125638
Medical System - F

**412)** ***Rubus niveus*** Thunb.
Habit - Climbing shrub; Flowering and Fruiting - April to June
World native distribution - Afghanistan, China, India, Jawa, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Taiwan, Thailand, Vietnam
Indian distribution - Almost throughout India
FRLH 125508
Medical System - F

**413)** ***Rubus paniculatus*** Sm.
Habit - Climbing shrub; Flowering and Fruiting - April to June
World distribution - China, India, Myanmar, Nepal
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttarakhand, Sikkim, West Bengal
FRLH 125412

Medical System - F

**414)** ***Sibbaldia cuneata*** Edgew.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Afghanistan, China, India, Nepal, Pakistan, Taiwan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125293

**415)** ***Sorbaria tomentosa*** (Lindl.) Rehder

Habit - Shrub; Flowering and Fruiting - June to September

World distribution - Afghanistan, India, Kyrgyzstan, Nepal, Pakistan, Uzbekistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - F

**416)** ***Spiraea canescens*** D.Don

Habit - Shrub; Flowering and Fruiting - March to September

World distribution - China, India, Myanmar, Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125396

Medical System - F

**417)** ***Spiraea vacciniifolia*** D.Don

Habit - Shrub; Flowering and Fruiting - March to September

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Nagaland, Uttarakhand

FRLH 125275

Note - Endemic to Himalayas

**Family – Rubiaceae (6 genera and 10 species)**

**418)** ***Galium aparine*** L.

Habit - Herb; Flowering and Fruiting - March to July

World distribution - Palearctic (North Africa, Europe and temperate Asia)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125628

Medical System - FHC

**419)** ***Galium asperifolium*** Wall.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Afghanistan, Bangladesh, China, India, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125257

Medical System - FC

**420)** ***Galium elegans*** Wall.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Bangladesh, Borneo, China, India, Jawa, Myanmar, Nepal, Pakistan, Philippines, Taiwan, Thailand

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand, West Bengal

FRLH 125337

**421)** ***Galium sp.***

Habit - Herb; Flowering and Fruiting - June to September

FRLH 125395

Note - Yet unidentified species. Collected on the way to Kandi from Langani, in June.

**422)** ***Himalrandia tetrasperma*** (Wall. ex Roxb.) T.Yamaz.

Habit - Shrub; Flowering and Fruiting - April to July

World distribution - Afghanistan, Bangladesh, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir,

Sikkim, Uttarakhand

Medical System - F

**423)** ***Leptodermis lanceolata*** Wall.

Habit - Shrub; Flowering and Fruiting - May to September

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125382

Medical System - F

Note - Endemic to Himalayas

**424)** ***Neanotis calycina*** (Wall. ex Hook.f.) W.H.Lewis

Habit - Herb; Flowering and Fruiting - August to September

World distribution - Bangladesh, China, India, Jawa, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Meghalaya, Sikkim, Uttarakhand

Note - Found near waterfalls growing on dripping rocks with thick moss cover

**425)** ***Oldenlandia corymbosa*** L.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa and Tropical Asia (China, India, Pakistan, Saudi Arabia & SE Asia)

Indian distribution - Almost throughout India

Medical System - SR

**426)** ***Rubia cordifolia*** L.

Habit - Climbing herb; Flowering and Fruiting - May to September

World distribution - Africa, Asia (Afghanistan, China, India, Japan, Mongolia, Pakistan, South East Asia)

Indian distribution - Almost throughout India

FRLH 125529

Medical System - AFTUSC

Note - High Volume Traded species under trade name Majith, Manjistha

**427)** ***Rubia manjith*** Roxb.

Habit - Climbing herb; Flowering and Fruiting - June to September

World distribution - China, India, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

FRLH 125429

Medical System - A

**Family – Rutaceae (3 genera and 3 species)**

**428)** ***Boenninghausenia albiflora*** (Hook.) Rchb. ex Meisn.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - China, India, Japan, Jawa, Laos, Lesser Sunda Is., Myanmar, Nepal, Pakistan, Philippines, Sulawesi, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand, West Bengal

FRLH 125364

Medical System - FC

**429)** ***Skimmia anquetilia*** N.P.Taylor & Airy Shaw

Habit – Small tree; Flowering and Fruiting - July to September

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

Medical System - F

Note - Endemic to Western Himalaya and Nepal

**430)** ***Zanthoxylum armatum*** DC.

Habit - Shrub; Flowering and Fruiting - March to June

World native distribution - Bangladesh, China, India, Japan, Korea, Laos, Myanmar, Nepal, Pakistan, Philippines, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Odisha, Sikkim, Uttarakhand

Medical System - A

Note - High Volume Traded species under trade name Tejbal, Timur Tejova

**Family – Sabiaceae (1 genus and 2 species)**

**431)** ***Meliosma dilleniifolia*** (Wall. ex Wight & Arn.) Walp.

Habit - Tree; Flowering and Fruiting - June to September

World distribution - Bangladesh, China, India, Myanmar, Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal

FRLH 125489

**432)** ***Meliosma simplicifolia*** **subsp. pungens** (Wall. ex Wight & Arn.) Beusekom

Habit - Tree; Flowering and Fruiting - May to September

World distribution - India, Myanmar, Sri Lanka, Sumatra

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Manipur, Meghalaya, Odisha, Nagaland, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal

FRLH 125497

Medical System - F

**Family – Salicaceae (2 genera and 2 species)**

**433)** ***Populus ciliata*** Wall. ex Royle

Habit - Tree; Flowering and Fruiting - March to July

World distribution - China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

FRLH 125625

Medical System - F

**434)** ***Salix cf. disperma*** Roxb. ex D.Don

Habit - Tree; Flowering - March to May

World distribution - Afghanistan, China, India, Mongolia, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125616

**Family – Santalaceae (1 genus and 1 species)**

**435)** ***Viscum album*** L.

Habit - Parasitic shrub; Flowering and Fruiting - April to November

World native distribution - Africa (Algeria, Morocco), Asia (China, India, Iran, Myanmar, Nepal, Pakistan, Transcaucasus, Turkey, Vietnam) and Europe

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Sikkim, Tamil Nadu, Uttarakhand

Medical System - AFHUMC

**Family – Sapindaceae (3 genera and 3 species)**

**436)** ***Acer cappadocicum*** Gled.

Habit - Tree; Flowering and Fruiting - April to June

World native distribution - Afghanistan, China, India, Iran, Italy, Myanmar, Nepal, North Caucasus, Pakistan, Transcaucasus, Turkey

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Sikkim, Uttarakhand, West Bengal

FRLH 125500

Medical System - F

**437)** ***Aesculus indica*** (Wall. ex Cambess.) Hook.

Habit - Tree; Flowering and Fruiting - May to October

World distribution - Afghanistan, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu, & Kashmir, Meghalaya, Sikkim, Uttarakhand

FRLH 125484

Medical System - F

Note - Endemic to Himalaya

**438)** ***Sapindus mukorossi*** Gaertn**.**

Habit - Tree; Flowering and Fruiting - May to November

World distribution - China, India, Japan, Korea, Laos, Myanmar, Nepal, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal

Medical System - AC

Note - High Volume Traded species under trade name Aretha mota, Reetha, Soapnut

**Family – Saxifragaceae (3 genera and 3 species)**

**439)** ***Astilbe rivularis*** Buch.-Ham. ex D.Don

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Borneo, China, India, Jawa, Laos, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal.

Medical System - FC

**440)** ***Bergenia ciliata*** (Haw.) Sternb.

Habit - Herb; Flowering and Fruiting - March to May

World distribution - India and Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125408

Medical System - A

Note - Endemic to Himalaya

Note - High Volume Traded species under trade name Pashanbhed, Pasanabheda

**441)** ***Saxifraga parnassifolia*** D.Don

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India and Nepal

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125390

**Family – Schisandraceae (1 genus and 1 species)**

**442)** ***Schisandra grandiflora*** (Wall.) Hook.f. & Thomson

Habit - Climbing shrub; Flowering and Fruiting - May to August

World distribution - China, India and Nepal

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand

**Family – Scrophulariaceae (3 genera and 3 species)**

**443)** ***Buddleja crispa*** Benth.

Habit - Shrub; Flowering and Fruiting - April to June

World distribution - Afghanistan, China, India, Iran, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125456

**444)** ***Scrophularia himalensis*** Royle ex Benth.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - India

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand

FRLH 125333

Note - Endemic to Indian Himalayan region

**445)** ***Verbascum thapsus*** L.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Palearctic (Western Asia, China, India and Europe)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand

FRLH 125538

Medical System - HUMC

**Family – Simaroubaceae (2 genera and 2 species)**

**446)** ***Ailanthus altissima*** (Mill.) Swingle

Habit - Tree; Flowering and Fruiting - April to August

World native distribution - China and Mongolia

Introduced into - Africa, Asia, Europe, New Zealand, North America and South America

Indian distribution - Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttarakhand

FRLH 125473

Medical System - HFC

Note - Naturalised high potential invasive tree species entering inside Khokhan WLS

**447)** ***Picrasma quassioides*** (D.Don) Benn.

Habit - Tree; Flowering and Fruiting - May to July

World distribution - China, India, Japan, Korea, Nepal, Taiwan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand

FRLH 125482

Medical System - AU

**Family – Smilacaceae (1 genus and 2 species)**

**448)** ***Smilax elegans*** Wall. ex Kunth

Synonym - *Smilax glaucophylla* Klotzsch

Habit - Climbing herb; Flowering and Fruiting - April to July

World distribution - Bangladesh, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Jammu and Kashmir, Himachal Pradesh, Meghalaya, Sikkim, Uttarakhand, West Bengal

FRLH 125477

Medical System - F

**449)** ***Smilax vaginata*** Decne.

Habit - Herb; Flowering and Fruiting - May to July

World distribution - Afghanistan, India, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Nagaland, Uttarakhand

FRLH 125444

Note - Endemic to Himalayas

**Family – Solanaceae (4 genera and 7 species)**

**450)** ***Datura stramonium*** L.

Habit - Herb; Flowering and Fruiting - May to September

World native distribution - Central America

Introduced into - Africa, Asia, Australia, Europe, North America and South America

Indian distribution - Throughout India

FRLH 125588

Medical System - AFHVUSC

Note - Naturalised invasive species in open disturbed lands

**451)** ***Nicandra physalodes*** (L.) Gaertn.

Habit - Herb; Flowering and Fruiting - July to September

World native distribution - Argentina, Bolivia, Chile, Peru (Western South America)

Introduced into - Africa, Asia, Australia, Europe, North America and Eastern South America

Indian distribution - Almost throughout India

FRLH 125313

Medical System - F

Note - Naturalised invasive species

**452)** ***Nicotiana tabacum*** L.

Habit - Herb; Flowering and Fruiting - July to October

World native distribution - Bolivia

Introduced into - Africa, Asia, Europe, North America and South America

Indian distribution - Almost throughout India

FRLH 125318

Medical System - AFHUSC

Note - Cultivated species in villages often seen as escape in orchards

**453)** ***Solanum americanum*** Mill.

Habit - Herb; Flowering and Fruiting - May to September

World native distribution - North America and South America

Introduced into - Africa, Asia, and Australia

Indian distribution - Throughout India

FRLH 125515

Medical System - AV

Note - Naturalised exotic species

**454)** ***Solanum pseudocapsicum*** L.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - South America

Introduced into - Africa, Asia, Australia, Europe and North America

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Kerala, Maharashtra, Meghalaya, Punjab, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal (Darjeeling)

FRLH 125645

Medical System - FH

Note - Naturalised invasive exotic species

**455)** ***Solanum viarum*** Dunal

Habit - Herb; Flowering and Fruiting - May to September

World native distribution - South America

Indian distribution - Throughout India

FRLH 125614

Medical System - F

Note - Naturalised invasive exotic species

**456)** ***Solanum villosum*** Mill.

Habit - Herb; Flowering and Fruiting - June to September

World native distribution - Africa, Asia (except SE) and Europe (widespread)

Indian distribution - Throughout India

FRLH 125336

Medical System - A

**Family – Symplocaceae (1 genus and 1 species)**

**457)** ***Symplocos paniculata*** (Thunb.) Miq.

Habit - Tree; Flowering and Fruiting - May to August

World native distribution - Bangladesh, China, India, Japan, Laos, Mongolia, Myanmar, Nepal, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim, Uttarakhand

FRLH 125490

Medical System - AUC

**Family – Thymelaeaceae (2 genera and 2 species)**

**458)** ***Daphne papyracea*** Wall. ex G.Don

Habit - Shrub; Flowering and Fruiting - March to June

World distribution - Bangladesh, China, India, Myanmar, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, , Sikkim, Uttarakhand, West Bengal

FRLH 125498

Medical System - HF

**459)** ***Wikstroemia canescens*** Meisn.

Habit - Shrub; Flowering and Fruiting - June to October

World distribution - Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan, Sri Lanka

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Uttarakhand

FRLH 125391

Medical System - FC

**Family – Ulmaceae (1 genus and 1 species)**

**460)** ***Ulmus villosa*** Brandis ex Gamble

Habit - Tree; Flowering and Fruiting - March to April

World distribution - India, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir

FRLH 125561

Note - Endemic to Western Himalaya

**Family - Urticaceae (11 genera and 15 species)**

**461)** ***Boehmeria ternifolia*** D.Don

Habit - Shrub; Flowering and Fruiting - July to September

World distribution - India, Nepal

Indian distribution - Haryana, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim,

Uttarakhand, West Bengal

Medical System - F

**462)** ***Boehmeria virgata*** (G.Forst.) Guill.

Habit - Shrub; Flowering and Fruiting - July to October

World distribution - Africa, Asia (China, India, Sri Lanka and South East) and Australia

Indian distribution - Almost throughout India

FRLH 125595

Medical System - F

**463)** ***Chamabainia cuspidata*** Wight

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Jawa, Myanmar, Nepal, Sri Lanka, Sulawesi, Taiwan, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

**New addition to the state flora of Himachal Pradesh**

FRLH 125441

**464)** ***Debregeasia saeneb*** (Forssk.) Hepper & J.R.I.Wood

Habit - Shrub; Flowering and Fruiting - March to July

World distribution - Afghanistan, China, Ethiopia, India, Nepal, Pakistan, Saudi Arabia, Yemen

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand;

Medical System - F

**465)** ***Elatostema monandrum*** (Buch.-Ham. ex D.Don) H.Hara

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Laos, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, West Bengal

Medical System - SR

**466)** ***Elatostema sessile*** J.R.Forst. & G.Forst**.**

Habit - Herb; Flowering and Fruiting - July to September

World distribution -China, India, Japan, Nepal, South East Asia

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Meghalaya, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125643

Medical System - F

**467)** ***Girardinia diversifolia*** (Link) Friis

Habit - Herb; Flowering and Fruiting - April to September

World distribution - Central Africa, Madagascar and Asia (China, India, Korea, Nepal, Pakistan, Sri Lanka, South East Asia, Taiwan, Yemen)

Indian distribution - Throughout India (tropical hills and temperate regions)

Medical System - FV

**468)** ***Gonostegia triandra*** (Blume) Miq.

Synonym - *Pouzolzia triandra* (Blume) Blume

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Australia, Bangladesh, China, India, Japan, Jawa, Laos, Lesser Sunda Is., Malaya, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Taiwan, Vietnam

Indian distribution - Almost throughout India

FRLH 125635

**469)** ***Lecanthus peduncularis*** (Royle) Wedd.

Habit - Herb; Flowering and Fruiting - June to September

World distribution - Central Africa, Asia (China, India, Japan, Nepal, Pakistan, Sri Lanka, Philippines, Taiwan)

Indian distribution - Almost throughout India in cool moist hilly areas

**470)** ***Lecanthus obtusus*** (Royle) Hand.-Mazz.

Habit - Herb; Flowering and Fruiting - July to September

Note - The name *L. obtusus* is currently treated as synonym of *L. peduncularis* (POWO) but I don't agree with this treatment. Both the species are significantly different in the plant habit/size, habitat and reproductive characteristics, particularly in the inflorescence and achenes. *Lecanthus pileoides* Chien & C. J. Chen a species described from China may be conspecific with *Lecanthus obtusus* (Royle) Hand.-Mazz though I need to work in detail to confirm the same.

**471)** ***Oreocnide frutescens*** (Thunb.) Miq.

Habit - Shrub; Flowering and Fruiting - June to September

World distribution - Cambodia, China, India, Japan, Korea, Laos, Malaya, Myanmar, Nepal, Pakistan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Mizoram, Odisha, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125503

Medical System - FC

**472)** ***Parietaria debilis*** G.Forst.

Habit - Herb; Flowering and Fruiting - July to September

World distribution - Africa, Temperate Asia and Australia (widespread)

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Sikkim, Tamil Nadu, Uttarakhand, West Bengal
FRLH 125519

**473)** ***Pilea scripta*** (Buch.-Ham. ex D.Don) Wedd.
Habit - Herb; Flowering and Fruiting - June to September
World distribution - China, India, Myanmar, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tripura, Uttarakhand, W. Bengal
FRLH 125543

**474)** ***Pilea umbrosa*** Wedd. ex Blume
Habit - Herb; Flowering and Fruiting - June to September
World distribution - China, India, Nepal, Pakistan, Vietnam
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttarakhand, West Bengal
FRLH 125343
Medical System - F

**475)** ***Urtica ardens*** Link
Habit - Herb; Flowering and Fruiting - May to September
World distribution - China, India, Nepal
Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Northeast, Sikkim, Uttarakhand, West Bengal
FRLH 125532
Medical System - F

**Family – Verbenaceae (1 genus and 1 species)**

**476)** ***Verbena officinalis*** L.
Habit - Herb; Flowering and Fruiting - June to September
World native distribution - Africa, Asia, Australia and Europe (widespread)

Indian distribution - Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Uttarakhand, West Bengal
FRLH 125323
Medical System - HC

**Family – Viburnaceae (1 genus and 3 species)**

**477)** ***Viburnum cotinifolium*** D.Don
Habit - Shrub; Flowering and Fruiting - May to August
World distribution - Afghanistan, China, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
FRLH 125264
Medical System - F

**478)** ***Viburnum grandiflorum*** Wall. ex DC.
Habit - Shrub; Flowering and Fruiting - November to June
World distribution - China, India, Nepal, Pakistan
Indian distribution - Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand
Medical System - F

**479)** ***Viburnum mullaha*** Buch.-Ham. ex D.Don
Habit - Shrub; Flowering and Fruiting - June to August
World distribution - China, India, Myanmar, Nepal, Pakistan
Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Sikkim, Uttarakhand, West Bengal
FRLH 125420

**Family – Violaceae (1 genus and 1 species)**

**480)** ***Viola canescens*** Wall.
Habit - Herb; Flowering and Fruiting - March to June
World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125493

Medical System - F

**Family – Vitaceae (1 genus and 2 species)**

**481)** ***Vitis flexuosa*** **var.** ***flexuosa*** Thunb.

Habit - Climbing shrub; Flowering and Fruiting - April to July

World distribution - Bangladesh, China, India, Japan, Jawa, Korea, Laos, Nepal, Philippines, Taiwan, Thailand, Vietnam

Indian distribution - Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Uttarakhand, West Bengal

FRLH 125453

Medical System - F

**482)** ***Parthenocissus semicordata*** (Wall.) Planch.

Habit - Climbing shrub; Flowering and Fruiting - May to August

World distribution - Bangladesh, China, India, Jawa, Laos, Malaya, Myanmar, Nepal, Pakistan, Taiwan, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Nagaland, Sikkim, Uttarakhand

Medical System - H

**Family – Zingiberaceae (3 genera and 4 species)**

**483)** ***Cautleya gracilis*** **var.** ***gracilis*** (Sm.) Dandy

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Thailand, Vietnam

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125421

Medical System - F

**484)** ***Cautleya spicata*** (Sm.) Baker

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal,

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling)

FRLH 125377

Medical System - F

**485)** ***Hedychium spicatum*** Sm**.**

Habit - Herb; Flowering and Fruiting - July to September

World distribution - China, India, Myanmar, Nepal, Thailand

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Uttarakhand, West Bengal

FRLH 125590

Medical System - AFTUC

Note - High Volume Traded species under trade name Kapoor kachri, Sati

**486)** ***Roscoea alpina*** Royle

Habit - Herb; Flowering and Fruiting - June to September

World distribution - India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Darjeeling)

FRLH 125385

Medical System - F

## 3.4.2 Gymnosperms (2 families, 5 genera and 6 species)

**Family - Pinaceae (4 genera and 5 species)**

**487)** ***Abies pindrow*** (Royle ex D.Don) Royle

Habit - Tree; Flowering - Male cones mature from April to May

World distribution - Afghanistan, India, Nepal

Indian distribution - Jammu & Kashmir, Himachal Pradesh, Uttarakhand

Medical System - A

Note - Endemic to Western and Central Himalaya

**488)** ***Cedrus deodara*** (Roxb. ex D.Don) G.Don

Habit - Tree; Flowering - Male cones mature from September to October

World native distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125300

Medical System - AFTUS

Note - High Volume Traded species under trade name Devdar, Devadaru

**489)** ***Picea smithiana*** (Wall.) Boiss.

Habit - Tree; Flowering - Male cones mature from April to May

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

FRLH 125272

Medical System - F

**490)** ***Pinus roxburghii*** Sarg.

Habit - Tree; Flowering- Male cones mature from March to May

World distribution - Bangladesh, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttarakhand

Medical System - AFTUS

Note - High Volume Traded species under trade name Gandabiroja, Sarala

**491)** ***Pinus wallichiana*** A.B.Jacks.

Habit - Tree; Flowering - Male cones mature from April to June

World native distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Arunachal Pradesh, Himachal Pradesh, Jammu Kashmir, Uttarakhand

FRLH 125612

Medical System - F

**Family – Taxaceae (1 genus and 1 species)**

**492)** ***Taxus contorta*** Griff.

Synonym - *Taxus wallichiana* subsp. contorta (Griff.) Silba

Habit - Tree; Flowering and Fruiting - May to September

World distribution - Afghanistan, China, India, Nepal, Pakistan

Indian distribution - Himachal Pradesh, Jammu & Kashmir, Uttarakhand

Medical System - AFM

Note - High Volume Traded species under trade name Talispatra, Sthauneya

## 3.4.3 Pteridophytes (5 families, 15 genera and 18 species)

**Family – Equisetaceae (1 genus and 1 species)**

**1)** ***Equisetum ramosissimum*** Desf.

World native distribution - Widespread species throughout Old world (Asia, Africa and Europe). In India the species is distributed almost throughout the country.

FRLH 125329

**Family – Ophioglossaceae (1 genus and 1 species)**

**2)** ***Botrychium multifidum*** (S.G.Gmel.) Rupr.

World native distribution - Pan Temperate (Asia, North America, Europe)

Note - Though widespread geographical distribution, the species is not common in India. Only a couple of plants were seen in Khokhan WLS in Munjhag grassland, which is adversely affected by cattle grazing.

**Family – Polypodiaceae (5 genera and 6 species)**

**3)** ***Cyrtomium macrophyllum*** (Makino) Tagawa

World distribution - China, India, Japan, Nepal, Pakistan, Taiwan

FRLH 125644

**4) *Goniophlebium amoenum*** (Wall. ex Mett.) Bedd.

Synonym - *Polypodium amoenum* Wall. ex Mett.

World distribution - China, India, Laos, Myanmar, Nepal, Taiwan, Thailand, Vietnam

FRLH 125633

**5) *Hypodematium crenatum*** (Forssk.) Kuhn

World distribution - Afghanistan, Africa (Central and East), China, India, Madagascar, Myanmar, Nepal, New Guinea, Oman, Pakistan, Philippines, Saudi Arabia, Socotra, Sri Lanka, Sumatra, Taiwan, Thailand, Vietnam, Yemen

FRLH 125627

**6) *Lepisorus nudus*** (Hook.) Ching

World distribution - China, India, Japan, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand, Vietnam

Epiphytic fern commonly seen in monsoon season on Quercus and Cedrus trees.

**7) *Polystichum squarrosum*** (D.Don) Fée

World distribution - China, India, Myanmar, Nepal, Pakistan

**8) *Polystichum stimulans*** (Kunze ex Mett.) Bedd.

World distribution - China, India, Nepal

FRLH 125462

**Family – Pteridaceae (4 genera and 5 species)**

**9) *Adiantum venustum*** D.Don

World distribution - Afghanistan, China, India, Myanmar, Nepal, Pakistan

FRLH 125640

**10) *Hemionitis formosana*** (Hayata) Christenh.

World distribution - China, India, Nepal, Pakistan, Philippines, Taiwan, Thailand, Vietnam

FRLH 125324

**11) *Hemionitis vestita*** (Hook.) J.Sm.

Synonym - *Notholaena himalaica* Fraser-Jenk.

World distribution - China, India, Myanmar, Nepal, Pakistan, Philippines, Taiwan, Thailand

**12) *Onychium lucidum*** (D.Don) Spreng.

World distribution - China, India, Myanmar, Nepal, Pakistan, Taiwan, Vietnam

Commonly seen throughout Khokhan WLS in moist shady areas.

**13) *Pteris cretica*** L.

World distribution - Africa, Southern Europe and Asia (Afghanistan, China, India, Japan, Korea, Myanmar Nepal, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand, West Asia)

FRLH 125610

**Family – Polypodiaceae (4 genera and 5 species)**

**14) *Asplenium dalhousieae*** Hook.

World distribution - Afghanistan, Arizona (USA), Eritrea (North East Africa), India, Mexico, Nepal, Pakistan, Yemen

FRLH 125637

**15) *Asplenium tenuicaule*** Hayata

World distribution - Afghanistan, Arizona (USA), Eritrea (North East Africa), India, Mexico, Nepal, Pakistan, Yemen

FRLH 125649

**16) *Diplazium esculentum*** (Retz.) Sw.

World native distribution - China, India, Japan, Nepal, Pakistan, Taiwan, Sri Lanka and entire South East Asia

FRLH 125631

Note - Edible wild vegetable in fiddlehead stage, locally called as Lingad/Lingadi

**17) *Woodsia elongata*** Hook.

World distribution - China, India, Nepal

FRLH 125294

**18) *Woodwardia unigemmata*** (Makino) Nakai

World distribution - China, India, Japan, Jawa, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Taiwan, Vietnam

FRLH 125634

# Chapter 4

# Results and findings

**Table 1. Trees of Khokhan WLS.** (Sixty-one species)

| Sr. No. | Family | Botanical Name |
|---|---|---|
| **1)** | **Anacardiaceae** | *Pistacia chinensis* subsp. integerrima (J.L.Stewart) Rech.f. |
| **2)** | | *Rhus chinensis* Mill. |
| **3)** | | *Toxicodendron wallichii* (Hook.f.) Kuntze |
| **4)** | **Aquifoliaceae** | *Ilex dipyrena* Wall. |
| **5)** | **Betulaceae** | *Alnus nepalensis* D.Don |
| **6)** | | *Alnus nitida* (Spach) Endl. |
| **7)** | | *Betula alnoides* Buch.-Ham. ex D.Don |
| **8)** | | *Carpinus viminea* Lindl. ex Wall. |
| **9)** | **Buxaceae** | *Buxus wallichiana* Baill. |
| **10)** | **Cannabaceae** | *Celtis tetrandra* Roxb. |
| **11)** | **Cornaceae** | *Alangium chinense* (Lour.) Harms |
| **12)** | | *Cornus capitata* Wall. |
| **13)** | | *Cornus macrophylla* Wall. |
| **14)** | **Ebenaceae** | *Diospyros lotus* L. |
| **15)** | | *Diospyros kaki* L.f. |
| **16)** | **Ericaceae** | *Lyonia ovalifolia* (Wall.) Drude |
| **17)** | | *Rhododendron arboreum* Sm. |
| **18)** | **Fabaceae** | *Dalbergia sissoo* Roxb. ex DC. |
| **19)** | | *Robinia pseudoacacia* L. |
| **20)** | **Fagaceae** | *Quercus leucotrichophora* A.Camus |
| **21)** | | *Quercus floribunda* Lindl. ex A.Camus |
| **22)** | | *Quercus semecarpifolia* Sm. |
| **23)** | **Hydrangeaceae** | *Philadelphus tomentosus* Wall. ex G.Don |
| **24)** | **Juglandaceae** | *Juglans regia* L. |
| **25)** | **Lauraceae** | *Machilus duthiei* King ex Hook.f. |
| **26)** | | *Neolitsea pallens* (D.Don) Momiy. & H.Hara |

| | | |
|---|---|---|
| **27)** | | *Phoebe lanceolata* (Nees) Nees |
| **28)** | **Malvaceae** | *Grewia optiva* J.R.Drumm. ex Burret |
| **29)** | **Meliaceae** | *Melia azedarach* L. |
| **30)** | | *Toona sinensis* (Juss.) M.Roem. |
| **31)** | **Moraceae** | *Ficus palmata* subsp. virgata Browicz |
| **32)** | | *Ficus neriifolia* Sm. |
| **33)** | | *Morus serrata* Roxb. |
| **34)** | **Oleaceaea** | *Ligustrum compactum* (Wall. ex G.Don) Hook.f. & Thomson ex Brandis |
| **35)** | | *Olea europaea* subsp. cuspidata (Wall. & G.Don) Cif. |
| **36)** | **Phyllanthaceae** | *Glochidion heyneanum* (Wight & Arn.) Wight |
| **37)** | **Pinaceae** | *Abies pindrow* (Royle ex D.Don) Royle |
| **38)** | | *Cedrus deodara* (Roxb. ex D.Don) G.Don |
| **39)** | | *Picea smithiana* (Wall.) Boiss. |
| **40)** | | *Pinus roxburghii* Sarg. |
| **41)** | | *Pinus wallichiana* A.B.Jacks. |
| **42)** | **Rhamnaceae** | *Rhamnus triquetra* (Wall.) Brandis |
| **43)** | **Rosaceae** | *Malus domestica* (Suckow) Borkh. |
| **44)** | | *Prunus armeniaca* L. |
| **45)** | | *Prunus cerasoides* Buch.-Ham. ex D.Don |
| **46)** | | *Prunus cornuta* (Wall. ex Royle) Steud. |
| **47)** | | *Prunus persica* (L.) Batsch |
| **48)** | | *Pyrus pashia* Buch.-Ham. ex D.Don |
| **49)** | | *Pyrus communis* L. |
| **50)** | **Sabiaceae** | *Meliosma dilleniifolia* (Wall. ex Wight & Arn.) Walp. |
| **51)** | | *Meliosma simplicifolia* subsp. pungens (Wall. ex Wight & Arn.) Beusekom |
| **52)** | **Salicaceae** | *Populus ciliata* Wall. ex Royle |
| **53)** | | *Salix disperma* Roxb. ex D.Don |
| **54)** | **Sapindaceae** | *Acer cappadocicum* Gled. |
| **55)** | | *Aesculus indica* (Wall. ex Cambess.) Hook. |
| **56)** | | *Sapindus mukorossi* Gaertn. |

| | | |
|---|---|---|
| **57)** | **Simaroubaceae** | *Ailanthus altissima* (Mill.) Swingle |
| **58)** | | *Picrasma quassioides* (D.Don) Benn. |
| **59)** | **Symplocaceae** | *Symplocos paniculata* (Thunb.) Miq. |
| **60)** | **Taxaceae** | *Taxus contorta* Griff. |
| **61)** | **Ulmaceae** | *Ulmus villosa* Brandis ex Gamble |

**Table 2. Himalayan endemic plant species present in Khokhan WLS.**

| Sr. No. | Family | Botanical Name | Distribution |
|---|---|---|---|
| 1) | **Acanthaceae** | *Justicia pubigera* (Nees) Wall. ex C.B.Clarke | WH, P, N |
| 2) | **Apiaceae** | *Bupleurum lanceolatum* Wall. ex DC. | WH, P, N |
| 3) | **Apiaceae** | *Ligusticum marginatum* C.B.Clarke | WH, Pk, Af |
| 4) | **Apocynaceae** | *Marsdenia* lucida Edgew. ex Madden | IH, N |
| 5) | **Aristolochiaceae** | *Aristolochia punjabensis* Lace | WH, Pk |
| 6) | **Asparagaceae** | *Polygonatum govanianum* Royle | WH, Pk |
| 7) | **Asteraceae** | *Cordiofontis flexuosa* (Royle ex Lindl.) G.L.Nesom | WH, Pk, N |
| 8) | **Asteraceae** | *Erigeron acris* var. *multicaulis* (Wall. ex DC.) C.B.Clarke | IH, Pk |
| 9) | **Asteraceae** | *Melanoseris brunoniana* (Wall. ex DC.) N.Kilian & Ze H.Wang | IH, Pk, A |
| 10) | **Asteraceae** | *Synotis rufinervis* (DC.) C.Jeffrey & Y.L.Chen | WH, Pk, N |
| 11) | **Balsaminaceae** | *Impatiens amphorata* Edgew. | WH |
| 12) | **Balsaminaceae** | *Impatiens edgeworthii* Hook.f. | WH, Pk, N |
| 13) | **Betulaceae** | *Alnus nitida* (Spach) Endl. | WH, Pk, N |
| 14) | **Caryophyllaceae** | *Silene edgeworthii* Bocquet | WH, Pk, N |
| 15) | **Fabaceae** | *Lespedeza juncea* var. | IH, Pk, N |

| | | | |
|---|---|---|---|
| | | *variegata (Cambess.) Ali* | |
| 16) | **Fagaceae** | *Quercus floribunda* Lindl. ex A.Camus | WH, Pk, Af, N |
| 17) | **Gentianaceae** | *Gentiana kurroo* Royle | WH, Pk, Af |
| 18) | **Gentianaceae** | *Swertia alata* (D.Don ex G.Don) Royle ex C.B.Clarke | IH, Pk |
| 19) | **Gentianaceae** | *Swertia tetragona* Edgew. | IH, Pk |
| 20) | **Hypericaceae** | *Hypericum dyeri* Rehder | WH, Pk, N |
| 21) | **Hypericaceae** | *Hypericum oblongifolium* Choisy | WH, Pk, N |
| 22) | **Lamiaceae** | *Roylea cinerea* (D.Don) Baill. | WH, N |
| 23) | **Lamiaceae** | *Phlomoides bracteosa (Royle ex Benth.) Kamelin & Makhm.* | IH, Pk, Af, N |
| 24) | **Lamiaceae** | *Salvia cana* Wall. ex Benth. | WH, Pk, N |
| 25) | **Liliaceae** | *Notholirion thomsonianum* (Royle) Stapf | WH, Pk, Af, N |
| 26) | **Orchidaceae** | *Gastrodia falconeri* D.L.Jones & M.A.Clem. | WH, N, P |
| 27) | **Orchidaceae** | *Neottia microglottis* (Duthie) Schltr. | WH (H.P. & Uttk.) |
| 28) | **Orobanchaceae** | *Pedicularis bifida* (Buch.-Ham. ex D.Don) Pennell | IH, Tibet |
| 29) | **Pinaceae** | *Abies pindrow* (Royle ex D.Don) Royle | WH, Pk, Af, N |
| 30) | **Plantaginaceae** | *Wulfeniopsis amherstiana (*Benth.) D.Y.Hong | WH, Pk, Af, N |
| 31) | **Poaceae** | *Microstegium falconeri* (Hook.f.) Clayton | WH, Bhutan |
| 32) | **Poaceae** | *Phacelurus speciosus* (Steud.) C.E.Hubb. | WH, Pk, Af |
| 33) | **Polygonaceae** | *Polygonum recumbens* Royle ex Bab. | WH, Pk, N |
| 34) | **Polygonaceae** | *Fallopia pterocarpa* (Wall. ex Meisn.) Holub | WH, N, Sikkim |

| | | | |
|---|---|---|---|
| 35) | **Ranunculaceae** | *Aquilegia pubiflora* Wall. ex Royle | WH, Pk, Af, N |
| 36) | **Ranunculaceae** | *Delphinium denudatum* Wall. ex Hook.f. & Thomson | WH, Pk, Af |
| 37) | **Rosaceae** | *Geum roylei* Wall. | IH, Pk, Af |
| 38) | **Rosaceae** | *Potentilla nepalensis* Hook. | WH, Pk, N |
| 39) | **Rosaceae** | *Spiraea vacciniifolia D.Don* | IH, Pk, N |
| 40) | **Rubiaceae** | *Leptodermis lanceolata* Wall. | IH, Pk, N |
| 41) | **Rutaceae** | *Skimmia anquetilia* N.P.Taylor & Airy Shaw | IH, Pk, Af |
| 42) | **Saxifragaceae** | *Bergenia ciliata* (Haw.) Sternb. | IH, Pk, N |
| 43) | **Scrophulariaceae** | *Scrophularia himalensis* Royle ex Benth. | IH (Indian) |
| 44) | **Smilacaceae** | *Smilax vaginata* Decne. | IH, Pk, N, Af |
| 45) | **Taxaceae** | *Taxus contorta* Griff. IUCN Endangered A2acd 2011 | WH, Pk, Af, N, Ch |
| 46) | **Ulmaceae** | *Ulmus villosa* Brandis ex Gamble Vulnerable B2ab(i,ii,iii,v) 2021 | WH, Pk |
| 47) | **Zingiberaceae** | *Roscoea alpina* Royle | IH, Pk |

Af - Afghanistan, , IH - Indian Himalayas, N - Nepal, Pk - Pakistan, WH - Indian Western Himalaya.

Source - BSI Checklist of Plants of India and POWO 2022

**Table 3. IUCN red listed threatened species.**

| Sr. No. | Family | Botanical Name | IUCN status |
|---|---|---|---|
| **1.** | **Orchidaceae** | *Calanthe davidii* Franch. | Endangered regionally (C2a(i, ii); D) 2019 |
| **2.** | **Gentianaceae** | *Gentiana kurroo* Royle | Critically Endangered (A2cd) 2015 |
| **3.** | **Melanthiaceae** | *Paris polyphylla* Sm. | Vulnerable (A4cd) 2020 |
| **4.** | **Taxaceae** | *Taxus contorta* Griff. | Endangered |

| | | | |
|---|---|---|---|
| | | | (A2acd) 2010 |
| **5.** | **Ulmaceae** | *Ulmus villosa* Brandis ex Gamble | Vulnerable B2ab(i,ii,iii,v) 2021 |

Source - https://www.iucnredlist.org/

**Table 4. Threatened and conservation concern plants of Himachal Pradesh based on CAMP 2003, CAMP 2010 and IUCN red list.**

Seventeen species are found to be of threatened and of conservation concern (regionally) which include two critically endangered, nine endangered and four vulnerable species based on recent 2010 CAMP assessment.

| Sr. No. | Botanical Name | CAMP Assessment 2003 | CAMP Assessment 2010 | IUCN Global status |
|---|---|---|---|---|
| **1** | *Berberis aristata DC.* | - | EN | LC |
| **2** | *Crepidium acuminatum (D.Don) Szlach.* | - | VU | - |
| **3** | *Dioscorea deltoidea Wall. ex Griseb.* | EN | EN | - |
| **4** | *Gentiana kurroo* Royle | CR | CR | CR |
| **5** | *Habenaria intermedia D.Don* | EN | EN | - |
| **6** | *Herminium edgeworthii (Hook.f. ex Collett) X.H.Jin, Schuit., Raskoti & Lu Q.Huang* | - | CR | - |
| **7** | *Hypericum perforatum* L. | VU | VU | - |
| **8** | *Paris polyphylla Sm.* | EN | EN | VU |
| **9** | *Polygonatum cirrhifolium* (Wall.) Royle | EN | EN | - |
| **10** | *Polygonatum govanianum* Royle | VU | EN | - |
| **11** | *Polygonatum verticillatum* (L.) All. | VU | EN | - |
| **12** | *Roscoea alpina* Royle | - | VU | - |
| **13** | *Roylea cinerea* (D.Don) Baill. | VU | - | |
| **14** | *Symplocos paniculata (Thunb.) Miq.* | - | VU | - |
| **15** | *Taxus contorta* Griff. | EN | EN | EN |

| | | | | |
|---|---|---|---|---|
| **16** | *Valeriana jatamansi Jones ex Roxb.* | VU | - | - |
| **17** | *Zanthoxylum armatum* DC. | EN | EN | LC |

Source - http://envis.frlht.org/medicinal-plants-conservation-concern-species.php

**Table 5. High Volume Traded (HVT) medicinal plant species found in Khokhan WLS.**

Out of three hundred ninety-seven (397) species of plants used in different Medical systems, twenty-five (25) species of High Volume Traded plants are documented from Khokhan WLS.

| Sr. No. | Family | Botanical Name | Estimated Annual (in MT) |
|---|---|---|---|
| **1.** | Anacardiaceae | *Pistacia chinensis* subsp. integerrima (J.L.Stewart) Rech.f. | 200-500 |
| **2.** | Asparagaceae | *Asparagus racemosus* Willd. | 2000-5000 |
| **3.** | Asparagaceae | *Polygonatum cirrhifolium* (Wall.) Royle | 100-200 |
| **4.** | Asteraceae | *Achillea millefolium* L. | 100-200 |
| **5.** | Berberidaceae | *Berberis aristata* DC. | 1000-2000 |
| **6.** | Berberidaceae | *Berberis lycium* Royle | 1000-2000 |
| **7.** | Caprifoliaceae | *Valeriana jatamansi* Jones ex Roxb. | 1000-2000 |
| **8.** | Convolvulaceae | *Ipomoea nil* (L.) Roth | 100-200 |
| **9.** | Convolvulaceae | *Dioscorea bulbifera* L. | 200-500 |
| **10.** | Ericaceae | *Rhododendron arboreum* Sm. | 100-200 |
| **11.** | Lamiaceae | *Mentha longifolia* (L.) L. | 100-200 |
| **12.** | Lythraceae | *Punica granatum* L. | 500-1000 |
| **13.** | Oleaceae | *Jasminum officinale* L. | 50-100 |
| **14.** | Papaveraceae | *Fumaria indica* (Hausskn.) Pugsley | 200-500 |
| **15.** | Pinaceae | *Cedrus deodara* (Roxb. ex D.Don) G.Don | 1000-2000 |
| **16.** | Pinaceae | *Pinus roxburghii* Sarg. | 1000-2000 |
| **17.** | Poaceae | *Cynodon dactylon* (L.) Pers. | 100-200 |
| **18.** | Rosaceae | *Prunus armeniaca* L. | 100-200 |

| | | | |
|---|---|---|---|
| **19.** | Rosaceae | *Prunus cerasoides* Buch.-Ham. ex D.Don | 100-200 |
| **20.** | Rubiaceae | *Rubia cordifolia* L. | 1000-2000 |
| **21.** | Rutaceae | *Zanthoxylum armatum* DC. | 200-500 |
| **22.** | Sapindaceae | *Sapindus mukorossi* Gaertn. | 200-500 |
| **23.** | Saxifragaceae | *Bergenia ciliata* (Haw.) Sternb. | 1000-2000 |
| **24.** | Taxaceae | *Taxus contorta* Griff. | 100-200 |
| **25.** | Zingiberaceae | *Hedychium spicatum* Sm. | 200-500 |

**Table 6. Naturalised invasive and introduced cultivated plant species.**

| Sr. No. | Family | Botanical Name |
|---|---|---|
| **1.** | Amaranthaceae | *Amaranthus caudatus* L. |
| **2.** | | *Dysphania ambrosioides* (L.) Mosyakin & Clemants |
| **3.** | Amaryllidaceae | *Narcissus tazetta* L |
| **4.** | Asparagaceae | *Yucca aloifolia* L. |
| **5.** | Asteraceae | *Ageratina adenophora* (Spreng.) R.M.King & H.Rob. |
| **6.** | | *Bidens pilosa* L. |
| **7.** | | *Cotula australis* Hook.f. |
| **8.** | | *Crassocephalum crepidioides* (Benth.) S.Moore |
| **9.** | | *Erigeron annuus* (L.) Desf |
| **10.** | | *Erigeron bonariensis* L. |
| **11.** | | *Erigeron canadensis* L. |
| **12.** | | *Galinsoga parviflora* Cav. |
| **13.** | | *Gamochaeta pensylvanica* (Willd.) Cabrera |
| **14.** | | *Tagetes minuta* L. |
| **15.** | Brassicaceae | *Lepidium virginicum* L. |
| **16.** | Cactaceae | *Opuntia elatior* Mill. |
| **17.** | Convolvulaceae | *Ipomoea nil* (L.) Roth |
| **18.** | | *Ipomoea purpurea* (L.) Roth |
| **19.** | Cucurbitaceae | *Cyclanthera pedata* (L.) Schrad. |
| **20.** | Euphorbiaceae | *Euphorbia helioscopia* L |
| **21.** | | *Euphorbia heterophylla* L. |

| | | |
|---|---|---|
| **22.** | Fabaceae | *Phaseolus coccineus* L. |
| **23.** | | *Robinia pseudoacacia* L. |
| **24.** | | *Senna septemtrionalis* (Viv.) H.S.Irwin & Barneby |
| **25.** | Iridaceae | *Crocosmia* × *crocosmiiflora* (Lemoine) N.E.Br. |
| **26.** | | *Iris tectorum* Maxim. |
| **27.** | Malvaceae | *Modiola caroliniana* (L.) G.Don |
| **28.** | Onagraceae | *Oenothera rosea* L'Hér. ex Aiton |
| **29.** | | *Oenothera biennis* L. |
| **30.** | Oxalidaceae | *Oxalis corniculata* L. |
| **31.** | | *Oxalis latifolia* Kunth |
| **32.** | Poaceae | *Paspalum dilatatum* Poir. |
| **33.** | | *Paspalum distichum* L. |
| **34.** | | *Zea mays* L. |
| **35.** | Portulacaceae | *Portulaca oleracea* L. |
| **36.** | Rosaceae | *Malus domestica* (Suckow) Borkh. |
| **37.** | | *Prunus persica* (L.) Batsch |
| **38.** | | *Pyrus communis* L. |
| **39.** | Simaroubaceae | *Ailanthus altissima* (Mill.) Swingle |
| **40.** | Solanaceae | *Datura stramonium* L. |
| **41.** | | *Nicandra physalodes* (L.) Gaertn. |
| **42.** | | *Nicotiana tabacum* L. |
| **43.** | | *Solanum americanum* Mill. |
| **44.** | | *Solanum pseudocapsicum* L. |
| **45.** | | *Solanum viarum* Dunal |

**Table 7. The number of family, genera and species in Khokhan WLS.**

| Groups | Families | Genera | Species |
|---|---|---|---|
| **Dicots** | 90 | 298 | 408 |
| **Monocots** | 14 | 60 | 78 |
| **Gymnosperms** | 2 | 5 | 6 |
| **Pteridophytes** | 5 | 15 | 18 |
| **Total** | **111** | **378** | **510** |

# Chapter 5

# Conclusion and analysis

1) Khokhan Wildlife Sanctuary is found to be rich in floristic diversity with 510 plant species recorded belonging to 378 genera of 111 families (90 Dicots, 14 Monocots, 2 Gymnosperms and 5 Pteridophytes). These include 492 higher plants belonging to 363 genera (358 angiosperms and 5 gymnosperms) and 18 pteridophyte species in 15 genera.

2) Out of 509 species, forty-seven (47) species are found to be endemic to Himalayan region.

3) Five (5) species of IUCN Red Listed Threatened plants *viz. Calanthe davidii* Franch., *Gentiana kurroo* Royle, *Paris polyphylla* Sm., *Taxus contorta* Griff. and *Ulmus villosa* Brandis ex Gamble are documented from this geographically small protected area.

4) Sixty-one (61) species of tree which also includes one Western Himalayan endemic species *i.e. Ulmus villosa* Brandis ex Gamble and two IUCN red listed threatened species *i.e. Taxus contorta* Griff. and *Ulmus villosa* Brandis ex Gamble are found to be present in the Khokhan WLS.

5) *Hydrocotyle himalaica* P.K.Mukh. (Araliaceae) is reported as a new addition to the Flora of Western Himalaya and *Chamabainia cuspidata* Wight (Urticaceae) is reported as a new addition to the state flora of Himachal Pradesh.

6) Fifteen (15) species of orchids are confirmed to be present in this small protected area which includes two new rare mycoheterotrophic orchids additions to the state flora of Himachal Pradesh *viz. Cyrtosia falconeri* (Hook.f.) Aver. and *Neottia microglottis*(Duthie) Schltr., of these the latter species is rediscovered after a gap of four decades.

7) Twenty-five (25) species of High Volume Traded (HVT) medicinal plants are documented to be present in the protected area. 337 species are found to be used in different Medical systems.

8) *Tricholepis karensium* Kurz, a rare Asteraceae plant known only from a couple of localities in India is found occurring at a single isolated locality in the sanctuary which needs population monitoring and in situ conservation efforts.

9) Two Himalayan endemic grass species *viz. Phacelurus speciosus* (Steud.) C.E.Hubb. and uncommon *Microstegium falconeri* (Hook.f.) Clayton are documented from Khokhan WLS total number of grass species.

10) Thirty-nine (39) species of introduced and invasive plants are found to be present in the Khokhan WLS protected area.

# Chapter 6
# Discussion

## 6.1 Observed threats to biodiversity in Khokhan WLS

During the six-month long surveys, it was found that anthropogenic pressure particularly over grazing in the Munjhag Thach/grassland and nearby ridges is causing adverse effects on the Flora of the region directly by grazing and indirectly by soil erosion. The Munjhag thatch receives heavy rainfall in form of torrential downpours during the months of July and August which leads to gully erosion. State forest department is aware of the same threat, so a couple of check dams are built for controlling soil erosion. Check dams are of course helping in slowing the process of gully erosion, but they are not preventing the root cause of extensive erosion, which is over grazing in grassland thus leaving no vegetation cover to protect soil from torrential downpours. Gujjar community people graze their Buffaloes and Cows in Munjhag thatch and during low winter rainfall years much of the vegetation is grazed in summers and as monsoon rains arrive by June end or early July the heavy downpours fall of soil with little herbaceous cover thus causing significant erosion activity which adversely

affects the biodiversity and entire ecosystem. Illicit tree felling activity though is not common in Khokhan WLS but is observed at a couple of localities in border areas of sanctuary, which needs to be controlled by forest department. Forest fires in dry winters (November to December) and peak summer season (May) cause severe damage to older trees which sometimes lead to death of big trees and burn new natural saplings and plantations, awareness among local people and their help is needed to control forest fires.

## 6.2 Limitations of study

Floristics surveyed were conducted from early April to first week of October as this is the appropriate time in Western Himalayas to find plants in their reproductive stage (flowering and fruiting). In the months of March with temperature increasing the snow starts melting in the higher temperate areas and a significant amount of spring precipitation is brought by strong Western Disturbances from February to April. In fact, unlike most parts of the state in the Kullu valley particularly south of Bijli Mahadev (Bajaura) the rainfall received from January to April is more than the rainfall received from June to September during Monsoon season (personal observation). Dhaliwal and Sharma (1999) in flora of Kullu mentioned rainfall at Bajaura from January to March as 516 mm while from July to September only 363 mm, same goes true for much of Khokhan WLS. But the late winter and spring season in 2022 turned out to be one of the driest years on record for most of Himachal Pradesh receiving less than 20% of the average normal rainfall (figure below). When the field surveys were started in the month of April the results of the dry spring season were very clearly visible as several spring ephemeral plant species were not found. Despite extensive field surveys there is a high possibility that some of the spring plant species remains poorly documented in Khokhan WLS due to the above-mentioned factors. Thus, there is a need to resurvey the spring flora of Khokhan Wildlife Sanctuary during climatologically normal or above normal winter precipitation years.

## Pre Monsoon Season, 2022

### 01 March 2022 – 2 May 2022

| District | Actual Rainfall (mm) | Normal Rainfall(mm) | Percentage (%) Departure from the normal |
|---|---|---|---|
| BILASPUR | 4 | 91.4 | -96 |
| CHAMBA | 17.2 | 228.6 | -92 |
| HAMIRPUR | 7.2 | 92.8 | -92 |
| KANGRA | 9.9 | 125.5 | -92 |
| KINNAUR | 18.6 | 204.3 | -91 |
| KULLU | 33.2 | 205.7 | -84 |
| LAHAUL & SPITI | 15 | 261.9 | -94 |
| MANDI | 21.4 | 119.2 | -82 |
| SHIMLA | 10.4 | 137.7 | -92 |
| SIRMAUR | 7 | 70.9 | -90 |
| SOLAN | 3.8 | 85.9 | -96 |
| UNA | 2.5 | 63.7 | -96 |
| SUBDIVISION RAINFALL | 13.8 | 181.9 | -92 |

**Figure 9. Pre-Monsoon season precipitation observed from 1 March – 2 May 2022. Source - Indian Meteorological Department, Met Centre Shimla.**

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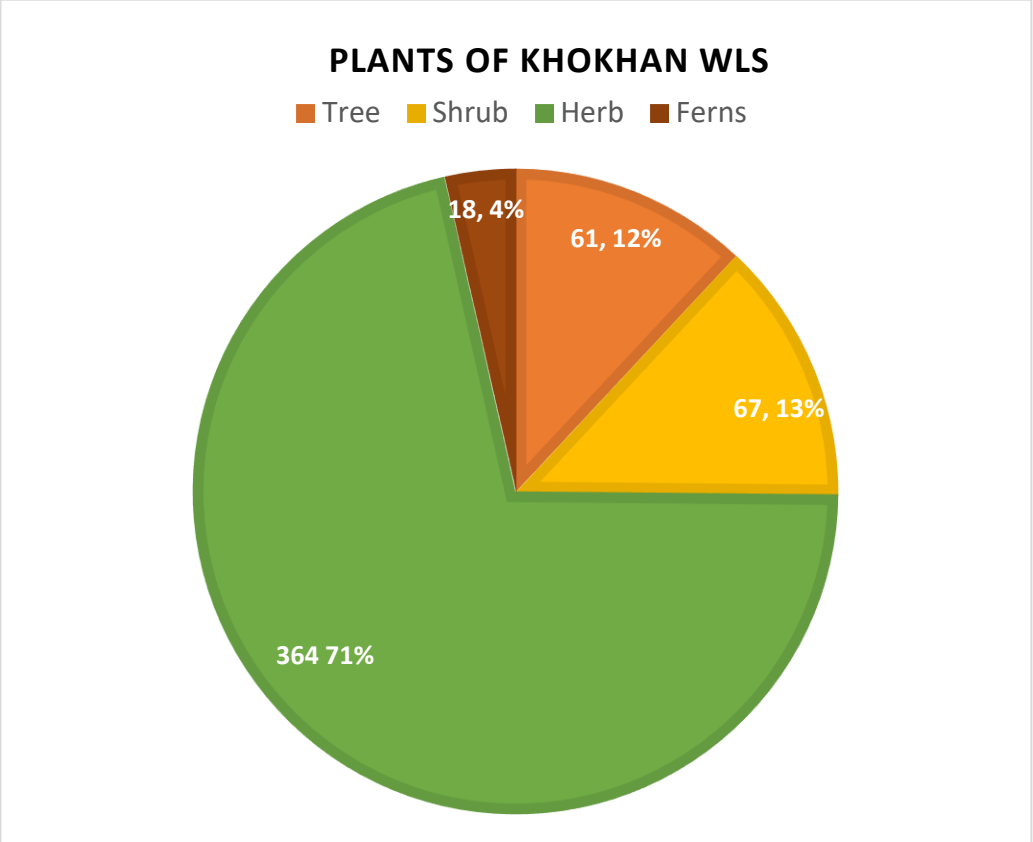
Working Plan of Khokhan WLS 2020-29. Kullu Wildlife Division, Himachal Pradesh State Forest Department.

# Appendices




**Appendix 1. Habit of plants of Khokhan WLS (Tree, Shrub, Herb and Ferns).**

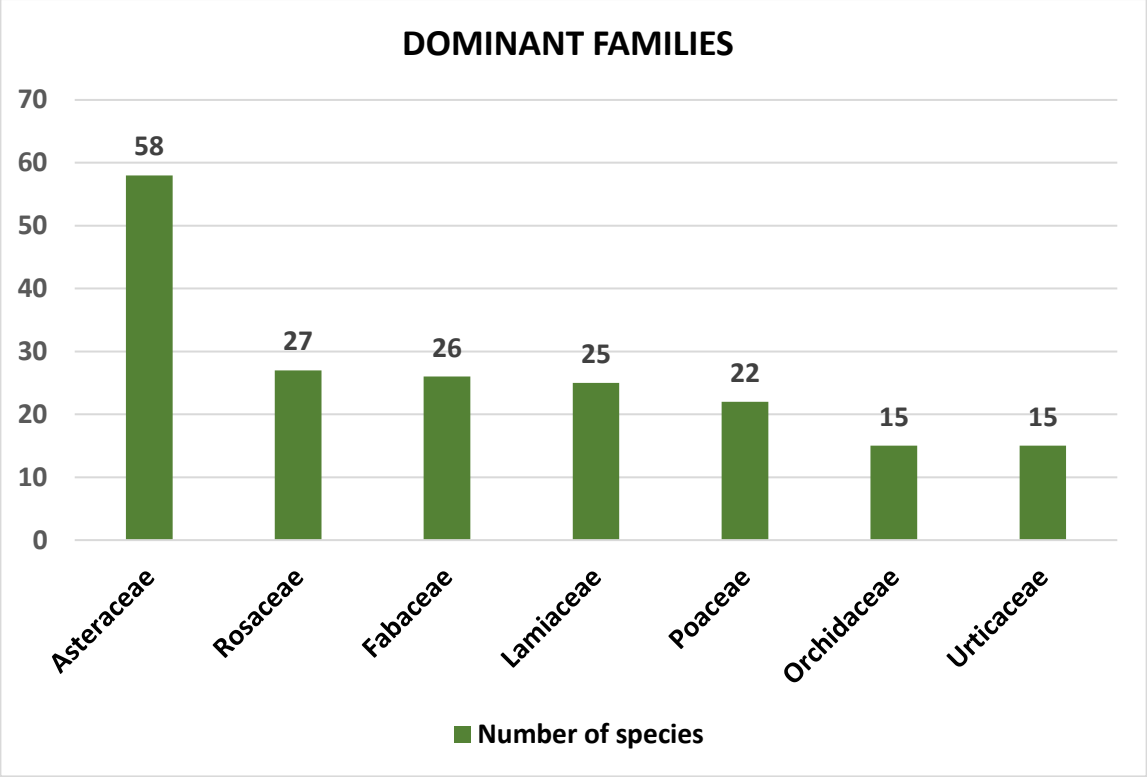
**Total number of plants - 510 (100%)**

Number of Tree species - 61(11.96%)

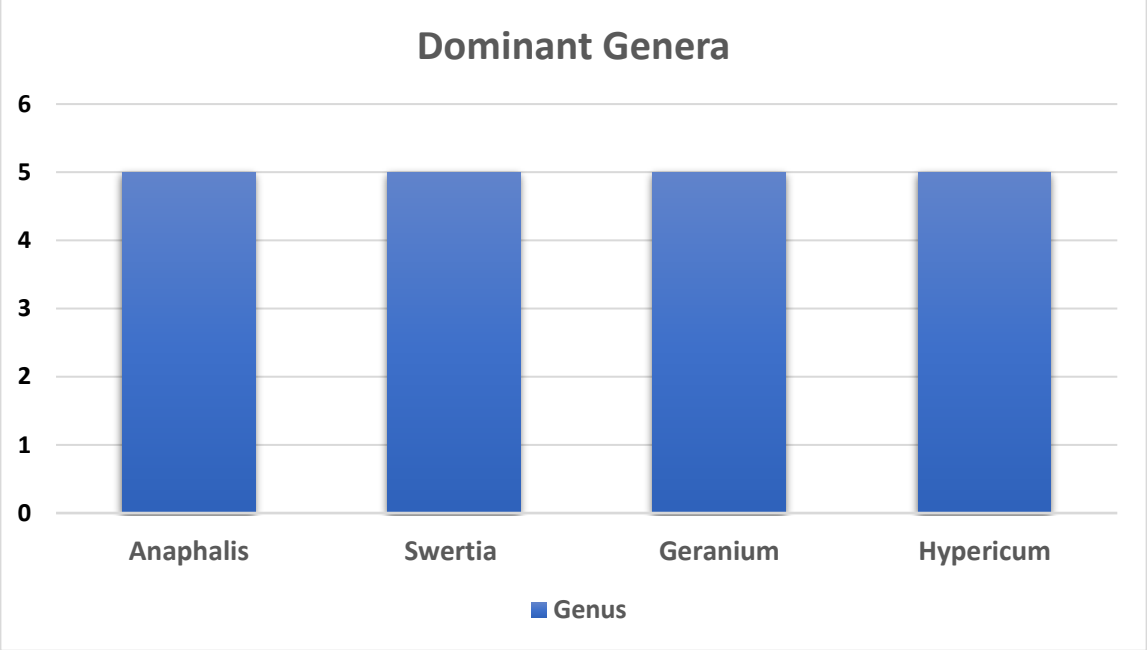
Number of Shrub species - 67 (13.13%)

Number of Herb species - 364 (71.37%)

Number of Pteridophytes - 18 (3.53%)




**Appendix 2. Dominant plant families in Khokhan WLS.**




**Appendix 3. Dominant plant genera in Khokhan WLS.**

| Visiting Dates |
|---|
| 02 April 2022 |
| 06 April 2022 |
| 29 April 2022 |
| 04 May 2022 |
| 06 May 2022 |
| 10 May 2022 |
| 14 May 2022 |
| 31 May 2022 |
| 02 June 2022 |
| 06 June 2022 |
| 08 June 2022 |
| 19 June 2022 |
| 12 July 2022 |
| 15 July 2022 |
| 17 July 2022 |
| 22 July 2022 |
| 08 August 2022 |
| 09 August 2022 |
| 13 August 2022 |
| 17 August 2022 |
| 23 August 2022 |
| 05 September 2022 |
| 10 September 2022 |
| 16 September 2022 |
| 23 September 2022 |
| 01 October 2022 |
| 26 |

**Appendix 4. Field survey images, in Munjhag accompanied with forest guard, images with orchids (*Cyrtosia falconeri* and *Satyrium nepalense*), view of dense forest of Khokhan WLS from Chwara village with *Yucca aloifolia* flowering in front and field survey record (26 field visits).**

**Appendix 5. Figure showing Munjhag grassland - dried in month of May (top) and lush green with monsoon low elevation stratus clouds hitting windward side of mountain in month of August (below).**

**Appendix 6. Orchids of Khokhan WLS, A - *Calanthe puberula*; *Satyrium nepalense*; *Herminium lanceum*; D - *Herminium edgeworthii*; E - *Crepidium acuminatum*; F - *Habenaria intermedia*; G - Gastrodia falconeri; H - *Neottia listeroides;* I - *Spiranthes australis*; J - *Calanthe tricarinata;* K - *Epipactis helleborine;* L - *Calanthe davidii***

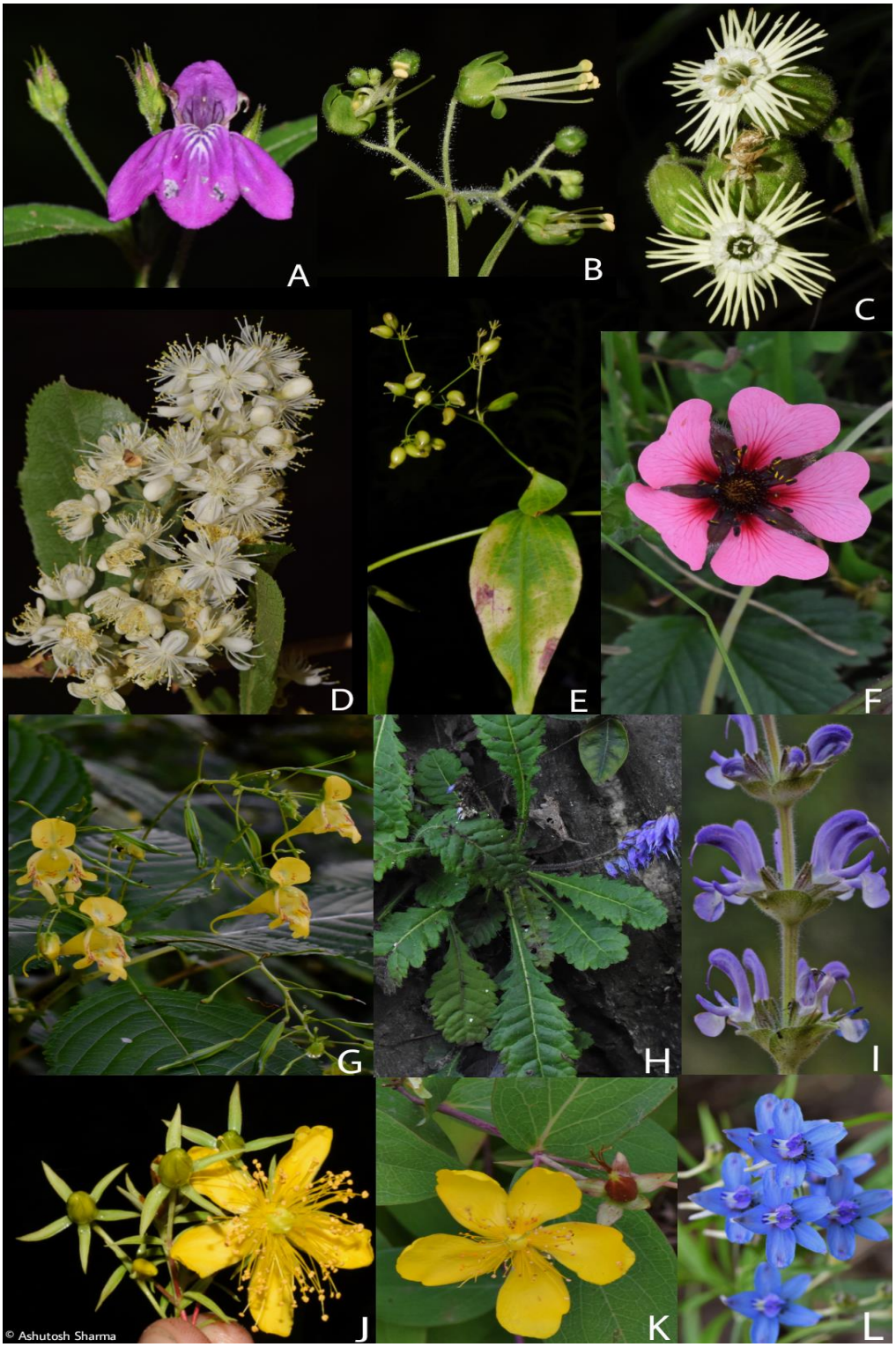
**Appendix 7. Figure showing floral dissection of *Cyrtosia falconeri* (Hook.f.) Aver., a rare mycoheterotrophic orchid reported as new addition to the state flora of Himachal Pradesh**

**Appendix 8. Figure showing floral dissection of *Neottia microglottis* (Duthie) Schltr., a very rare Western Himalayan endemic mycoheterotrophic orchid rediscovered after four decades and reported as new addition to the state flora of Himachal Pradesh.**

**Appendix 9. Figure showing IUCN red listed species found in Khokhan WLS**

**A - *Gentiana kurroo*; B - *Ulmus villosa*; C - *Paris polyphylla*; D- *Calanthe davidii.***

**Appendix 10. Figure showing A - *Hydrocotyle himalaica* (new record for the flora of Western Himalaya) and B - *Chamabainia cuspidata* (new addition to the state flora of Himachal Pradesh).**




**Appendix 11. Figure showing some Himalayan endemic species present in Khokhan WLS. A - *Justicia pubigera*; B - *Scrophularia himalensis*; C - *Silene edgeworthii*; D - *Symplocos paniculata*; E - *Bupleurum lanceolatum*; F - *Potentilla nepalensis*; G - *Impatiens edgeworthii*; H - *Wulfeniopsis amherstiana*; I - *Salvia cana*; J - *Hypericum dyeri* ; K - *Hypericum oblongifolium*; L - *Delphinium denudatum***

**Appendix 12. Figure showing a burnt mixed temperate forest of *Rhododendron arboreum* and *Cedrus deodara* after heavy monsoon showers, prone to soil erosion as a result of no vegetation cover/ canopy left after forest fire.**